













# THE FERNS OF BRITISH INDIA

BEING FIGURES AND DESCRIPTIONS OF FERNS FROM  
ALL PARTS OF BRITISH INDIA

*(Excludes of those found in The Ferns of Southern India and Ceylon)*

BY  
MAJOR R. H. BEDDOME

OFFICIALING CONSERVATOR OF FORESTS

VOL. I

MADRAS GANTZ BROTHERS  
LONDON J. VAN VOORST

1868





## POLYPODII 4

*Leaves free*

NOTHOCHILANA *h. Brown Prodr Fl N Holl 147*

(*Cincinnati Descaux* — *Argyrochosma* *J Sm* — *Leucchosma* *J Sm* — *Lepidosma* *J Sm* —)

Gen char *Stems* indusiate small rotundate oligocarpous contiguous becoming laterally confluent into a narrow line on border *the receptacle* terminal *Leaves* simple or forked from a central costa *Venules* free

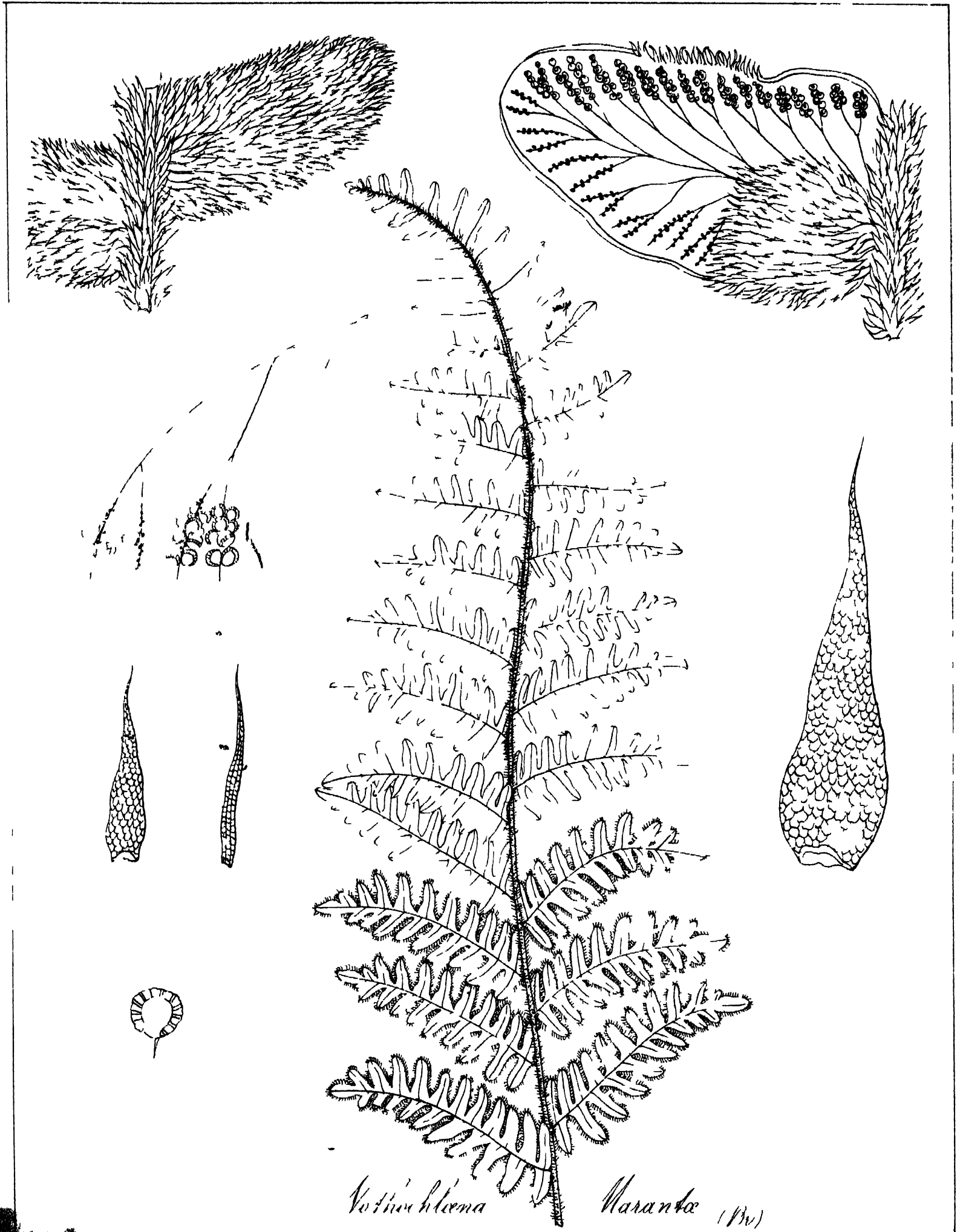
Fronds pinnate bi tri pinnate the margins sometimes with a tendency to become revolute and indusoid Rhizome short erect or decumbent *A genus with the habit of Cheilanthes but without an indusium* (Moore)

1 NOTHOCHILANA MARANTÆ (Br) Caudex a stout horizontal rhizome densely paleaceous with soft silky ferruginous finely pointed subulate scales stipites generally stout purplish black 3-6 inches long, aggregated setosely and densely hirsute as well as the rachis fronds 4-10 inches long 2-2½ inches wide oblongo lanceolate carnosio coriaceous glabrous above beneath densely clothed with ferruginous oblongo lanceolate imbricated scales bi pinnate primary pinnæ petiolate or sessile from a broadish obtuse base oblongo acuminate pinnules not numerous approximate sessile 2-3 lines long very obtuse entire, upper ones confluent at the base (as are the terminal primary pinnæ) the edge scarcely reflexed sori forming a broad border extending some way from the margin towards the costule much concealed by the paleaceous covering — *Hool Sp Fl v 120* — *Br Prodr Nov Holl p 146* — *Desv Webb Fl Canari iii p 455* — *N subcordata Desv* — *Acrostichum Marantæ Inn Sp Pl p 1527* — *Schk Fl t 4* — *Sw Syn Fl p 14* — *Willd Sp Pl v p 122* — *Sibth Fl Gr t 964* — *Ceterich De Cund* — *Gymnogramme Metten* — *A Canariense Willd Sp Pl v p 121*

The specimen figured is from near Simla

Hab South of Europe N Africa and adjacent islands Abyssinia N W India Kumaon, Kumbhari Simla Sikkim Bhotan

PLATE No 1



*Vitis bicolor*

*Vitis* (B.)







POLYPODIUM (See Ferns of S India p 54)

1 **POLYPODIUM TRICHOMANOIDES** (Sw) Caudex short erect paleaceous above densely rooting with wiry fibres stipites short 4 1 inch long densely tufted patent villous with long fibrous hairs fronds 3 4 inches to a span long 2 4 lines wide rigid membranaceous, linear attenuated at both extremities deeply nearly to the costa pinnatifid or almost pinnate (quite so at the very base) lobes horizontally patent from a broad base ovate or oblong entire sub concave beneath sub-deciduously ciliated with long fibrous or blackish patent hairs veins solitary in each lobe simple or forked each lobe having a single sorus near the costa.—*Hook Sp Fil* iv 178,—*Su Syn Fil* p 184 —1 gibbosum *Fec* —1 Serricula *Fec* —P nanum *Fec* —P sertularioides *J Sm in Hook Journ of Bot* iii 394

The specimen figured is from the Sikkim Himalaya (Dr Thomson )

Hab Tropical America from Brazil and Guiana to the Pacific and the Islands—Malacca Lachen, Sikkim—Himalaya, Islands of Ascension?

PLATE No II







## GONIOPTERIS (See Ferns of S India p 57)

1 **GONIOPTERIS LINEATA** (Colch) Stipes  $1\frac{1}{2}$  foot and more long rather stout scaleless glossy and as well as the rachis strongly tinged with red (rarely stramineous) fronds 1 2 3 feet long broad oblong or lanceolate coriaceous submembranaceous pinnated glabrous pinnæ numerous rather distant patent sessile 5 8 inches long  $\frac{1}{2}$  an inch or little more broad (on sterile fronds sometimes exceeding an inch) from an obliquely cuneate truncate sessile base, (lower ones rather more attenuated and subpetiolate) lanceolate or elongate oblong finely acuminate at the apex the margin coarsely and sharply submucronate serrated serratures pointing a little forward uniform costæ prominent beneath of the same colour as the rachis and stipes generally reddish veinlets about 8 14 pairs often alternate of which all are connivent except 2 3 short pairs in the teeth of the serratures seen in 2 series on the middle of the veinlets — *Hook Sp Fil* v 12 — *Colebr in Herb Wall and Wall Cat* n 300 — *P costatum*, *Wall Herb* (not *Goniopteris costata* of Brack)

The specimen figured is from Birmanah (Captain the Honorable J Dormer )

Hab Nepal, Kumaon, Simla, Nimblow, Silhet, Mishmee, Ceylon ?

PLATE No III









## POLYPODIEÆ

*Veins reticulated without free included veinlets*

### DICTYOPTERIS Presl Tent Pterid 194

(Dictymna J Smith — Polypodium sp Auct — Dryopteris sp Fee — Aspidium sp Blume — Phegopteris sp Mettenius)

Character: Sori non indusiate globose or oblong, compital & c the *receptacles* uniting several radiating reticulated veinlets or medial *Veins* uniformly reticulated (or sub pinnately branched) from a central costa the areoles elongated oblique without free included veinlets

Fronds coriaceous or sub coriaceous simple or bipinnate Sori sometimes marginally serial Rhizome creeping (? always)

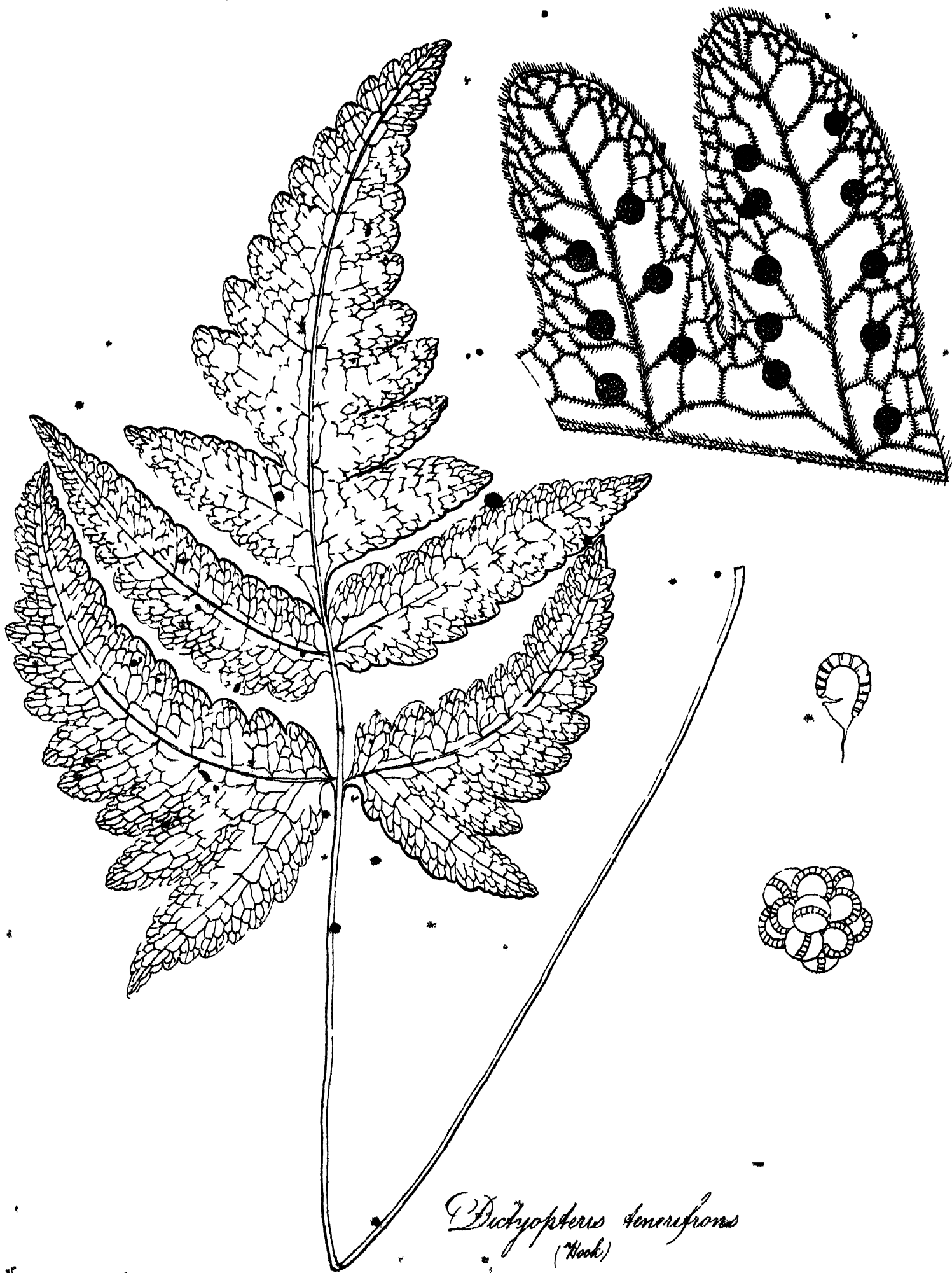
*The nearly uniform venation without included free veinlets distinguishes the genus (Moore)*

1 **DICTYOPTERIS TENERIFRONS** (Hook) Caudex small creeping underground scaleless with very few radicles stipites few remote slender glossy stramineous the base very tomentose with a few sparse scales partly subterraneous attached to the caudex by a small point fronds thin membranaceous pale green glabrous subpuberulous on the veins 6-9 inches long quite as broad as long cordate deltoid subterminate or pinnated with 3-9 sub falcate pinnæ lateral ones nearly opposite petiolate lowest pair half ovate acuminate 4-6 inches long lobate pinnatifid those of the superior margin with broad ovate nearly equal subdenticulate blunt lobes the inferior ones much elongated and acuminate the basal ones again lobate pinnatifid intermediate pinnæ ovate lanceolate pinnatifid terminal pinna long petiolate broad ovate acuminate deeply pinnatifid especially at the base veinlets uniformly reticulated areoles with no included free veinlets costular areoles large sori rather irregularly scattered dorsal or compital *Hook Sp Fil v 104*

The specimen figured is from Moulmein (Rev C S I Parish)

Hab W Trop Africa, Luzon, Moulmein

PLATE No IV



*Dictyopteris tenerifrons*  
(Hook.)





## POLYPODIEÆ

*Veins reticulated with free included veinlets*

† *Free veinlets excurrent*

### GONIOPHLEBIUM Blume Fl Jav 132

(*Marginaria Presl* (non *Boiss*) — *Synammia Presl* in part — *Pleurogonium Presl* — *Lepicystis J Smith* in part — *Lopholepis J Smith* — *Schellolepis J Smith* — *Cypripus Presl* — *Cisspodaria Link* in part *F* — *Polypodium sp Auct* — *Crammitida sp De Beau* — *Campyloneuri sp Auct* — *Acrostichum sp Langsdorff et Fischer* — *Mesoria sp Klotzsch*)

Gen char *Some* non indusiate globose (rarely oblong) the *receptacles* punctiform (rarely oblong) situated at the apex of the lower anterior venules or of the simple excurrent free veinlets one being included within each areole *Veins* forked or pinnate from a central costa the lower anterior *venules* usually free and fertile the rest angularly or arcuately anastomosing (in one or more frequently several series) and producing from their angles free excurrent *veinlets* which are often fertile the marginal veinlets free

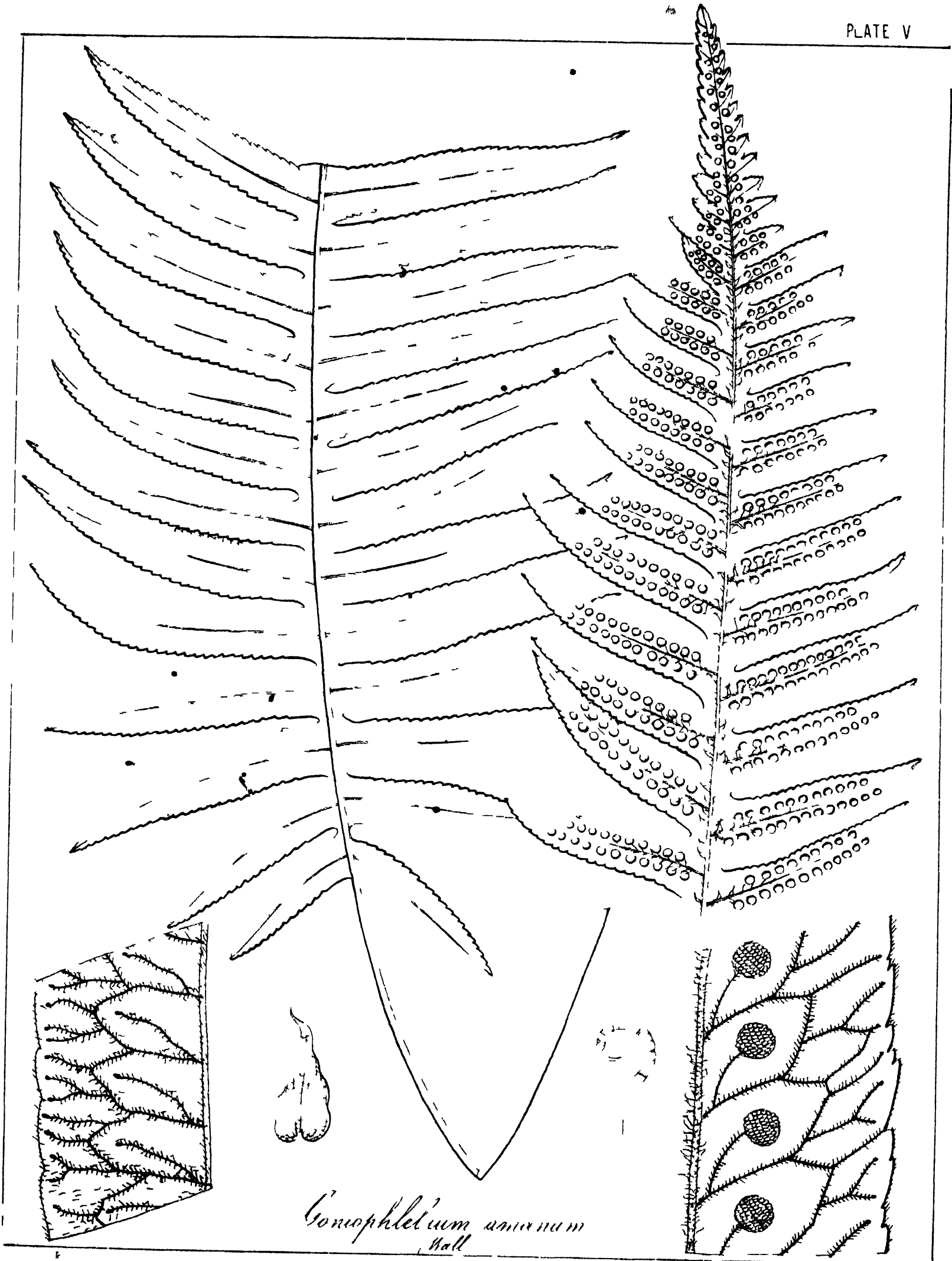
*Fronds* simple punctifid or pinnate herbaceous or coriaceous sometimes scaly the fertile often much narrower *Some* truly versely umbel or ternate sometimes squamiferous *Rhizome* creeping the fronds articulated (Moore)

1 GONIOPHLEBIUM AMENUM (Wall) *Index* creeping densely palaeaceous with ferruginous subulate ciliate stipule a span to a foot or more long stramineous or brown fronds 1 to nearly 2 feet long 6-10 inches wide glabrous or subpubescent ovate terminating in a lanceolate acuminate subentire segment, deeply punctifid to within 2-3 lines of the costa, segments horizontal more or less approximate 3-6-8 inches long  $\frac{1}{4}$  -  $\frac{1}{2}$  an inch wide subfalcate from a broad base ensiform gradually acuminate entire or coarsely dentato serrate lowest pair deflexed veins forming one costal series of moderately sized soriferous areoles and sometimes two (the second not soriferous) marginal veinlets free soriferous veinlet always arising from the vein at a distance from the costa on subglobose sunk (papillose on the upper side) — *Hook Sp Fil* v 24 — *Wall Cat n* 290 — *Mett Polyp* p 80 — *Margaria L* — *Goniophlebium J Sm*

The specimen figured is from Dalhousie (Captain Dyas)

Hab Nepaul Khasya Bhotan Kumaon (alt 6000 to 10000 feet) Mussoorie Dalhousie

PLATE No V



*Gonophlebium amianum*  
Hall





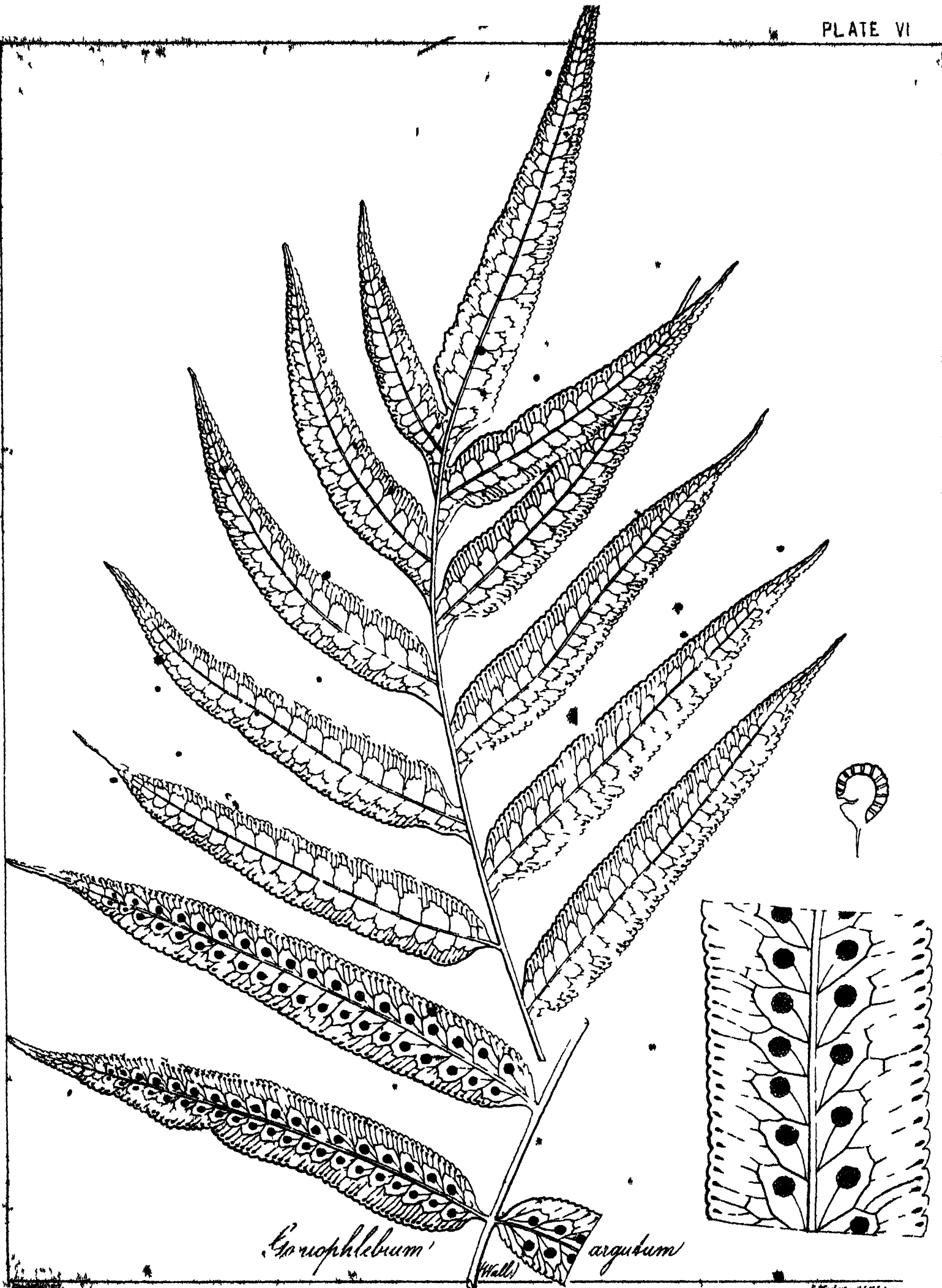


2 **CONTIOPHLLBIUM ARGUTUM** (Wall) Caudex thick as a writing quill squarrose with subulate blackish or brown glossy scales, stipites 3-4 inches to a span long testaceous brown glossy fronds firm membranaceous glabrous 1-2 feet long 8-10 inches broad pinnated pinnae distant sub horizontally patent 1-6 inches long  $\frac{1}{2}$ - $\frac{3}{4}$  inch wide from a broader but obtusely and oblique cuneated or sub truncated base (rarely rotundato auricled) elongato oblong acuminate rather obtusely serrated, lower ones often opposite the rest alternate superior ones more or less vinate and decurrent, terminal one sinular to the rest, veins forming a costal series of large oblong soriferous areoles marginal veins ending in a thickened apex within the margin all free semi orbicular, superficial at the apex of the free veins in the costal areoles *Hook Sp Fil* v 32 *Wall Cat* n 308

The specimen figured is from Nynce Tal (Mr Oldham)

**Hab** Nepaul, Kumaon, Nynce Tal, Sikkim, Khasya Gowhatty Plains

PLATE No VI







PLEOPELTIS (See Ferns of Southern India p 57)

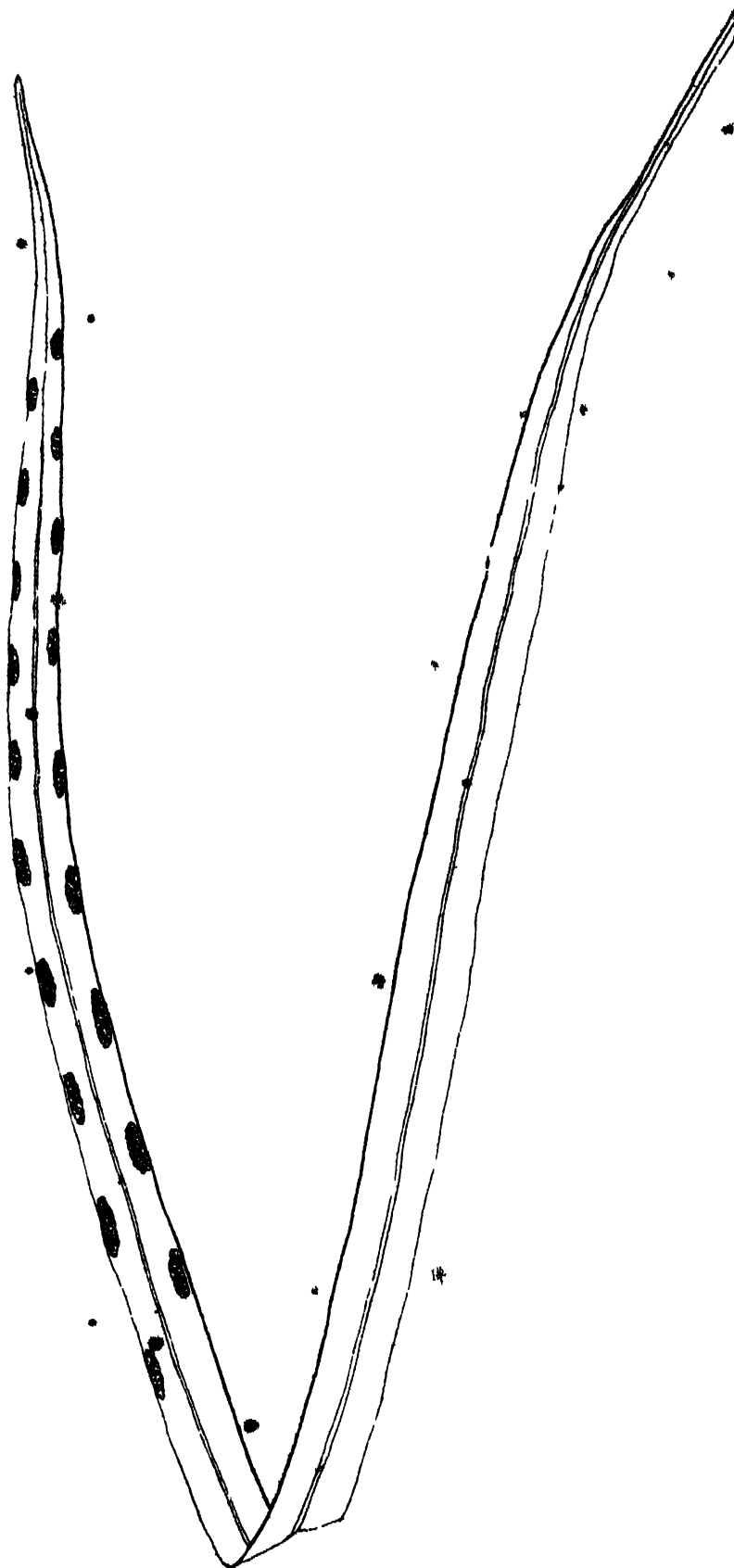
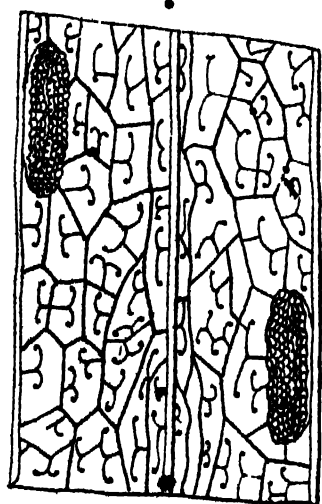
1 **PLEOPELTIS LONGIFOLIA** (Metten) Caudex horizontal creeping thick squamose, stipites approximate 2 3 inches long fronds 1 2 3 feet long  $\frac{1}{2}$  1  $\frac{1}{2}$  inch wide thick carnosio coriaceous glabrous linear lanceolate obtusely acuminate gradually long attenuated below on the stipes entire the margins sub revolute venation internal very indistinct costules veniform united by transverse veins into rather large areoles then into irregular lesser ones which include free veinlets sori compital oblong forming a line or series near the margin rather close placed, sunk into the substance of the frond and forming a corresponding elevated line on the upper surface capsules mixed with long stipitate scales—*Hook Sp Fil* v 60—*Metten Polyp* p 87 —*Grammitis longifolia Bl En Fil Jav* p 119 and *Pleopeltis in Adl and Gr decurrens and Pleopeltis decurrens Bl Il cc* —*Polyp contiguum Wall n 285 t*—*Hook Ic Il x t 987* (or *Cent of Ferns t 87*) *Fil Erot t 20*,—*Phymatodes and Drynaria revoluta J Sm* —*Paragrænna Blume and Moore Ind Fil xxxii*

*Mr Moore adopts Blume's former name and places this fern amongst the Trematodeæ with which it certainly has some affinity*

The specimen figured is from Moultmain (Rev C S P Larrish)

Hab Malay Islands and Peninsula, Java, Linnah Luzon Singapore, Mergui

PLATE No VII



*Pteropellis longifolia*  
(Mitt.)





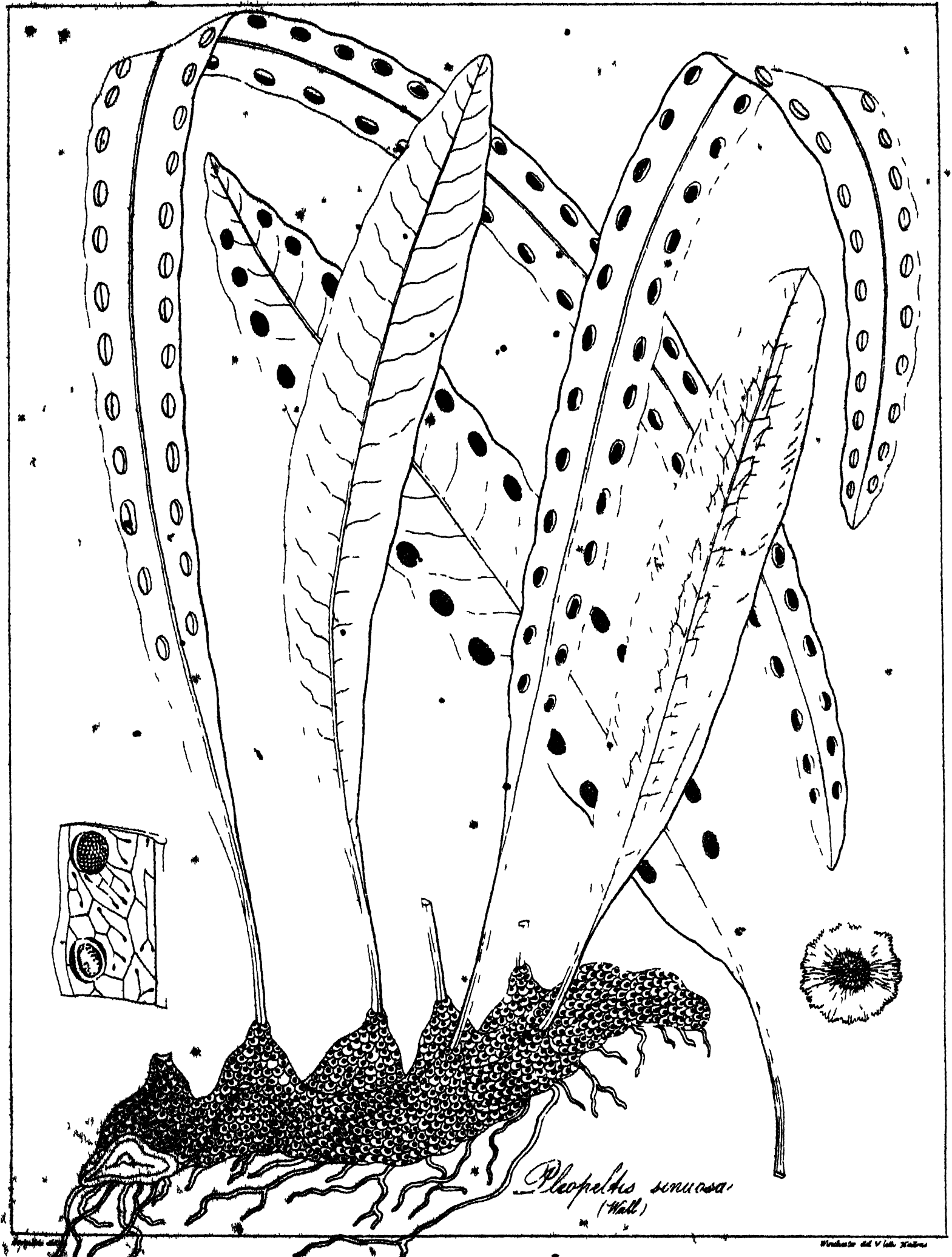


2 **PLEOPHYLLIS SINUOSA** (Will.) Caudex much branched long creeping or scandent on trees, sparingly radiculose  $\frac{1}{2}$  an inch to 2 inches thick almost woody when dry probably carnosous when recent studded as it were with large conical processes upon which the stipites are or have been articulated and which appear to increase much in size after the fronds have fallen the whole densely covered (as it were tessellated) with nearly orbicular appressed whitish peltate scales with a dark spot in the centre, stipites 1 2 inches long glabrous and scaleless fronds sub dimorphous sub coriaceous membranaceous glabrous *sterile* ones 3 6 7 inches long  $\frac{1}{2}$  1 inch broad sub elliptical, oblong obtuse entire, *fertile* ones longer sometimes a foot 16 inches long  $\frac{1}{2}$   $\frac{3}{4}$  of an inch wide linear elongate oblong obtuse the margins more or less sinuated the base in both attenuate decurrent venation copious anastomosing forming large very irregular areoles filled with lesser ones (formed by more slender veins) and these include branched or simple veinlets which occasionally again anastomose sori remote large oblong immersed in a cavity which forms pustules on the upper side arranged in a single series nearer the margin than the costa — *Hook Sp Fil* v 61, — *Wall Cat* n 2231

The figure is taken from Sir W Hooker's *Icones Filicum*

Hab Straits of Malacca, Amboyna, Isle of Java, New Hebrides Java Mergu, Birmah

PLATE No VIII



*Pleopeltis sonuosa*  
(Hall)



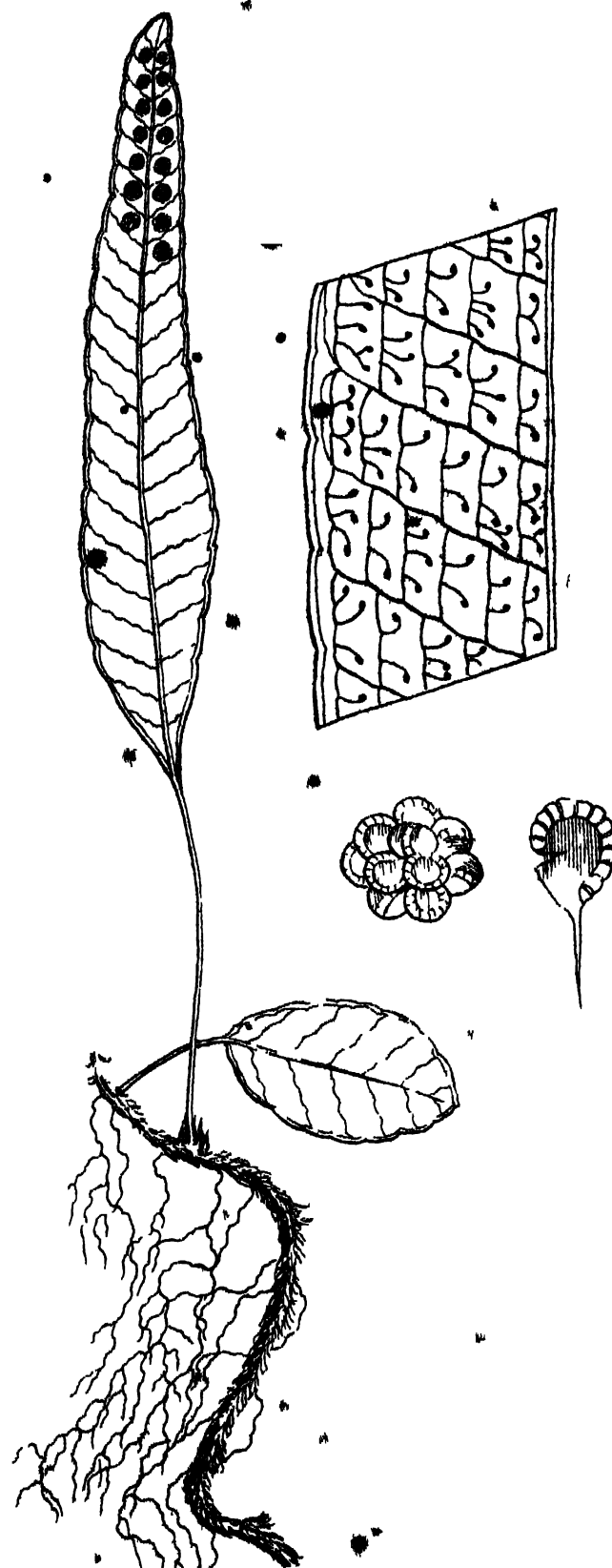


3 **PLEOPELTIS RHYNCOPHYLLA** (Hook.) Caudex creeping slender paleaceous, sub squarrose with subulate ferruginous scales, stipites scattered, slender 1 2 inches long of the *sterile* frond 2 4 of the *fertile* one fronds firm chartaceo membranaceous glossy, slightly thickened, remotely crenate, *sterile* ones 1 2 inches long elliptical or sub ovate obtuse *fertile* ones 3 6 inches long lanceolate from near the base, gradually and long-acuminated below cuneato attenuated venation distinct slightly prominent, the costules are connected by transverse veins forming areoles which enclose free veinlets which latter sometimes unite with opposite veins the sori are mostly confined to the narrow acuminate apex and when mature are very large in a single series on each side of the costa —*Hook. Bot. Beechey.* Fil. v 63, —*Hook. Ic. Plant.* 955 (*or t. 55 of Cent. of Ferns*)

The specimen figured is from Birmah (Rev. C. S. P. Parish)

Hab. Assam, Khasya, (alt 4,000 feet), Birmah

PLATE No. 18



*Pleopeltis rhyncophylla*  
(Hook.)





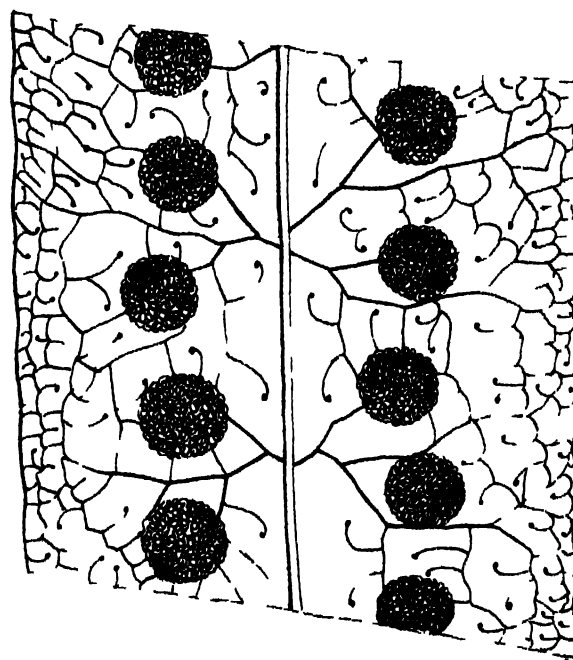
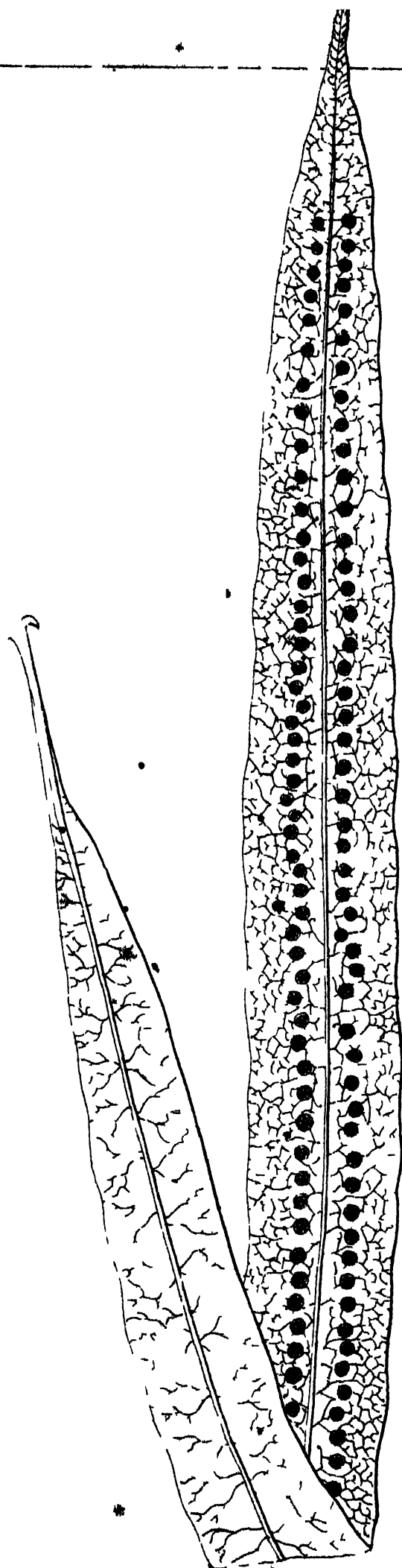


4 **PLEOPHTIS NORMAIS** (Don) Caudex very long creeping or scandent often as thick as a writing pen, the young portions clothed with black subulate striate squarrose scales in age perfectly smooth stipites very numerous on the caudex, more or less approximate 1 2 inches long and as well as the costa reddish stramineous fronds firm membranaceous glabrous varying extremely in sizes 1 2 feet or more long  $\frac{1}{4}$  of an inch to 2 inches wide lanceolate or elongate lanceolate or loriform, generally long and finely acuminate gradually attenuated and decurrent at the base entire sub filicte or flexuose venation slightly prominent especially beneath costules none veins forming rather large but very irregular arcoles with free included veinlets sori mostly compital rather large arranged in a single regular series nearer the costa than to the margin or in a waved line partially scattered or very copious and irregularly dispersed over the whole under surface of the frond —*Hook Sp Fil* v 69 —*Metten Polyp* p 86, t 1 f 41 43 —Var  $\alpha$  *normalis* frond 1 1  $\frac{1}{2}$  foot long  $\frac{1}{2}$  an inch to 1 inch wide —*Polypod. normale* Don *Prodr Nep* p 1, —*Phymatodes* Pr —*Drynaria*, J Sm —Var  $\beta$  *latifrons* fronds 1 1  $\frac{1}{2}$  foot long 1 2 inches wide sori regularly uniserial —Var  $\gamma$  *sparsisora* fronds 2 3 feet long  $\frac{1}{2}$  1 inch wide sori irregularly scattered and copious —P longifrons Wall Cat n 274, —*Hook and Gre In Fil* t 65 —*Drynaria*, Fee

The specimen figured is from Moulmein (Rev C S P Parish)

Hab Var  $\alpha$  and  $\gamma$  Nepaul Khasi Assam (alt 4 000 feet) Var  $\beta$  Malacca, Moulmein (alt 4 000 feet) China, Formosa

PLATE No 1



*Picepeltis normalis*  
(L. Kun)

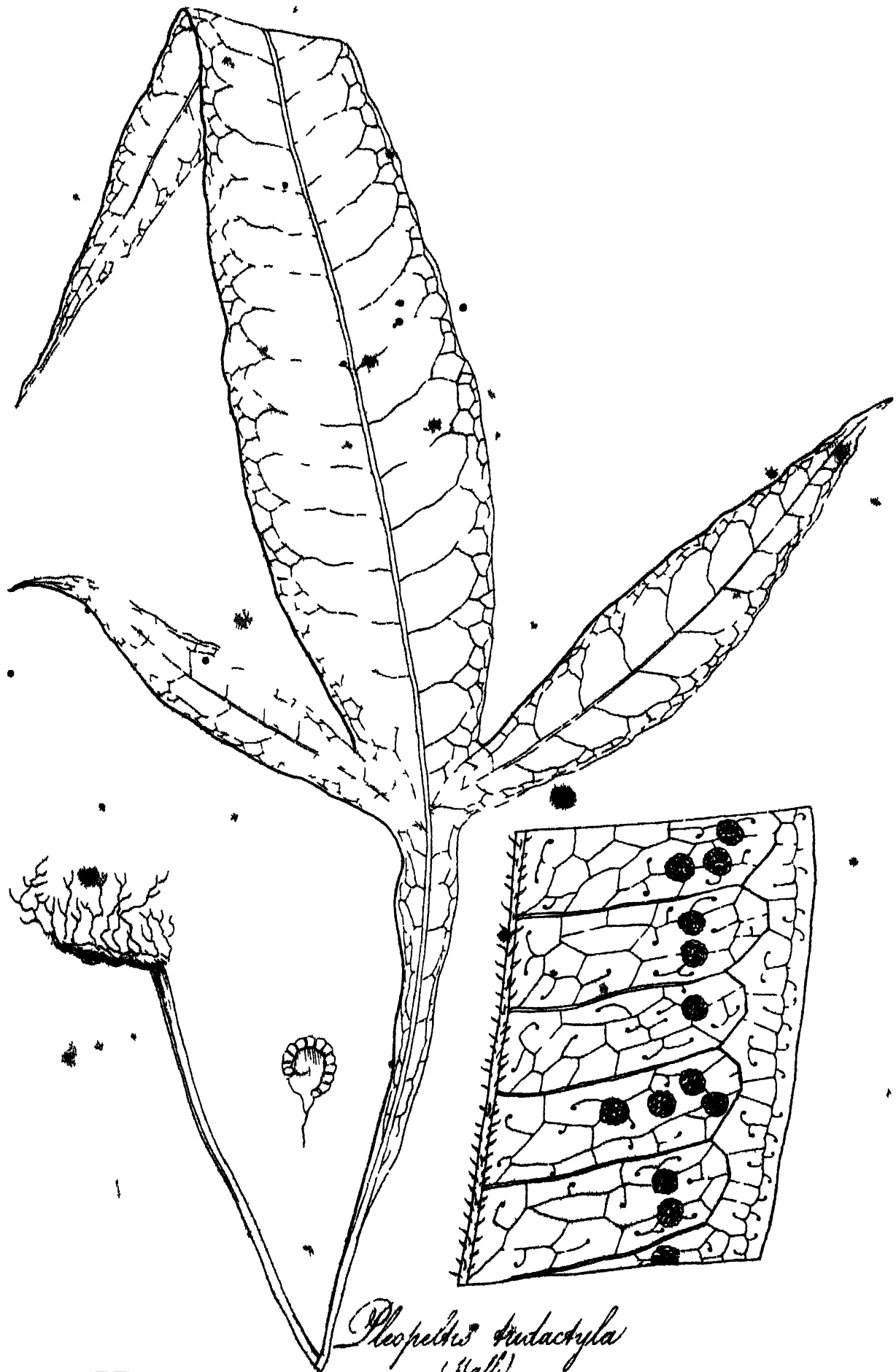




, **PLEOPLTIS TRIDACTYLA** (Wall) [Vide Ferns of S India p 60]

The plant here figured is from Bimala (Captain the Honorable J Dormer) and seem distinct from the small S Indian species figured in '*The Ferns of S India*'. It is undoubtedly Wallich's species so that the S Indian and Ceylon fern if distinct will have to receive another name.

PLATE No 21



*Pteropeltis tridactyla*  
(Hall)





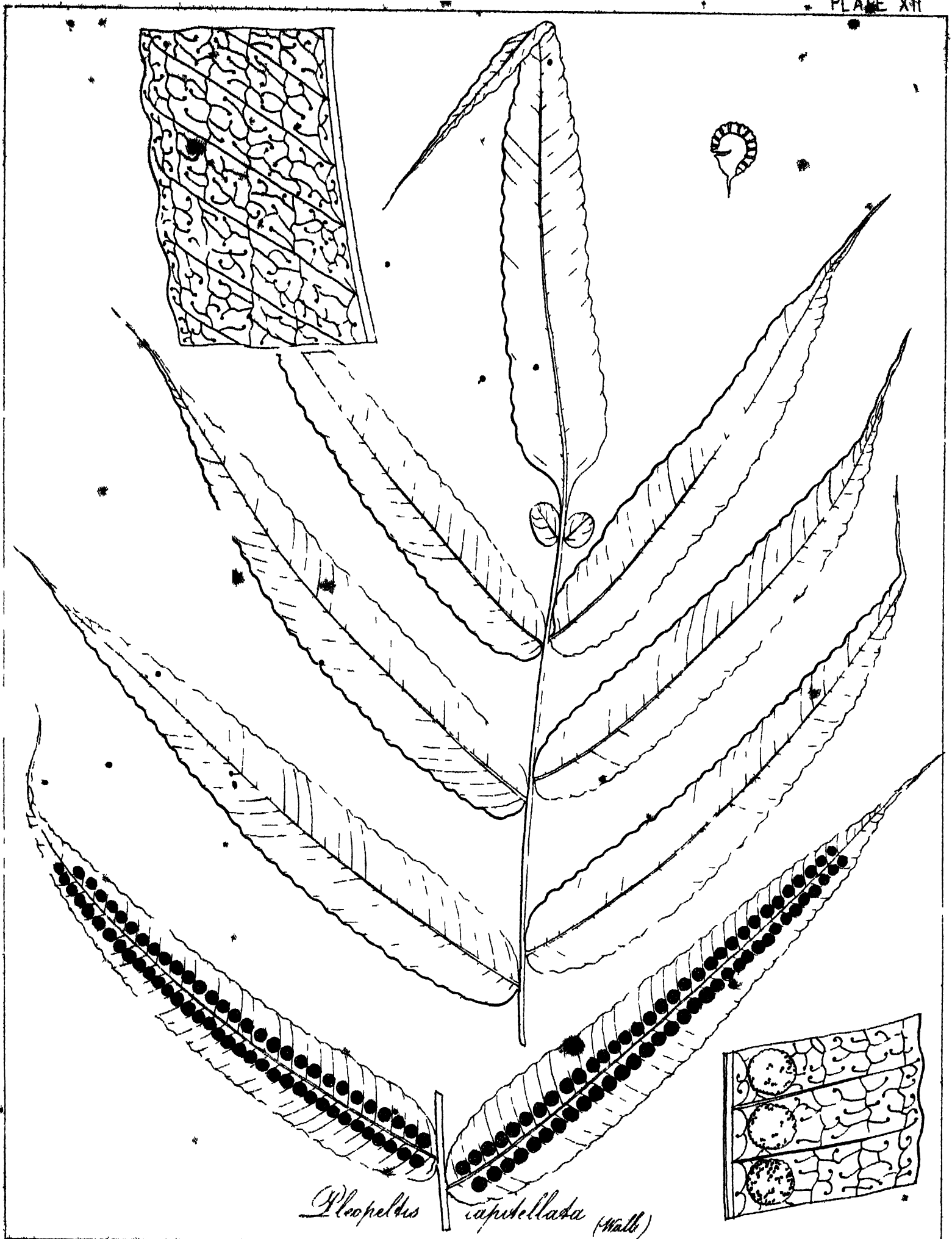


C **PIFOPFUTIS CAPITULATA** (Wall) *Cnidex* creeping furnished with hair like ovate or lanceolate scales stipite 1 foot and more long fronds 1 2 feet long membranaceous or coriaceous membranaceous glabrous ovate oblong pinnated (young fronds often simple) pinnule 1 to 21 pairs opposite or alternate articulated on the rachis sessile or more or less petiolate 5 9 inches long  $\frac{1}{2}$  to 2 inches broad, obtuse at the base finely acuminate at the apex (often with a distinct membranaceous margin) entire or slightly sinuate lobate costules straight extending to the margin these are connected by transverse veins with 3 4 series of areoles again divided into lesser areoles including free divaricating veinlets sori large superficial in a single series near the costa or 1 2 in the primary areoles — *Wall Cat* 306 *Phymatodes capillata* — *Hook Sp Fil* v 90 — *Phymatodes tennicauda* *Hook Bot*, — *Phy Himalayensis*, *Hook Bot* v 91 — *Polyp juglandifolium* *Don* — *Polyp venustum*, *Wall Cat* 305 (not Desv)

The specimen figured is from Nynce Tal (Mr Oldham)

Hab Nepal, Bhotan, Sikkim, Khasya, Assam, Kumaon (7,000 ft) Srinuggur, Simla Nynce Tal

PLATE No XII



*Pteropeltis caputellata* (Walt.)





DRYNARIA (See Ferns of S India p 63)

1 **DRYNARIA CORONANS** (Wall) Caudex thick creeping branched and interwoven villosa paleaceous with verrucate scales fronds large uniform when growing arranged in a circle firm coriaceous membranaceous but rather thin and translucent 2 and more feet long from a broad sessile cordate lobate pinnatifid base (then suddenly contracted) lanceolate deeply almost to the rachis pinnatifid segments 8-12 inches long  $\frac{1}{2}$  to 1 inch and more wide oblongo lanceolate acuminate lower ones gradually shorter entire incrassated at the margin, venation very manifest costules parallel extending to the margin these are connected by transverse veins forming 5-6 soriferous areoles and then again generally two or three others which include free veinlets sori oval often confluent longitudinally solitary in the primary areoles forming an excentric series always nearer one costule than the opposite one —*Hook Sp Fil* v 94 —*Wall Cat n* 288 —*Metten Polyp* p 121 t 40 41 (venation) —*Hook Ind Exot* t 91 —*Phymatodes Pl* —*Drynaria J Sm*, —Var  $\beta$  sori of the series confluent, —*Polyp contiguum*, *Wall in Herb Hook* (not *Cat n* 285)

The specimen figured is from Moulmein (Capt the Honorable J Dormer)

Hab Nepaul, Kumaon, Assam, Sikkim, Khasya Mishmee Moulmein, Hongkong

PLATE No VIII









## PFRANEMEÆ

WOODSIA *A. Brown Trans Lin Soc xi 1831*

*Physematum Kaulfuss* — *Hymenocystis C. A. Meyer* — *Hymenolæna C. A. Meyer* — *Porrimia Hooker* — *Polypodium sp.*, *Auct.* — *Aspidium sp.* *Auct.* — *Alsophilæ sp.* *Auct.* — *Dicksoniæ sp.* *Auct.* — *Cystopteris sp.* *Auct.* — *Listræ sp.* *Presl* — *Acrostichum sp.* *Auct.* — *Ceterachis sp.* *Auct.* — *Nothochlæna sp.* *Desvaux*

(*in Char.*) *Sori* involucriate, i. e. with inferior indusia globose the *receptacles* medial or terminal. *Involucre* soft membranaceous pateriform and fimbriately ciliate or calyciform with the margin lobed or subglobose with a contracted mouth. *Veins* simple forked or pinnate, from a central costa. *venules* free.

Fronds membranaceous herbaceous small pinnate pinnate pinnatifid or bipinnate. Rhizome tufted erect or decumbent. A very well marked group distinguished by the involucriform nature of the indusium the sessile sori and free veins. (Moore)

1 **WOODSIA LLONGATA** (Hook.) Glanduloso pilose especially above fronds oblong elongate pinnated pinnae rather distant alternate sessile from a broadish base oblong obtuse pinnatifid about  $\frac{1}{2}$  way down segments short rounded incisodentate each bearing a sorus (rarely more) near the sinus involucre small soon bursting with an irregular opening at the top glanduloso pilose stipes and rachis slightly chaffy

The specimen figured is from the Himalayas (Dr. Thomson)

Hab. Himalayas, Krande

PLATE No. XIV







## DIDYMOCHLADINEÆ

DIDYMOCHLADINA Desfont. Bot. Mag. v. 303 t. 7 p. 6

(*Monochlamis caudiculata* — *Hippodium caudiculatum* — *Cerium Reinwardti* — *Togularia Reinwardti* — *Hystero-  
gramma Langfordii* — *Diplazium* sp. *Raddi* — *Aspidium* sp. *Auct.* — *Asplenium* sp. *Auct.* — *Adiantum* sp. *Auct.*)

Caecidium. Stem indusate elliptic oblong the *receptacle* oblong dorsal at the apex of the venules. *Indusium* of the same form obtuse at both ends attached longitudinally along its centre to a crest formed elevation of the receptacle free at the margins. *Veins* bilaterally forked *canals* direct free the anterior one in each fascicle sometimes the sterile ones clavate at the apex.

Frond bipinnate coriaceous pinnales dimidiate or subdimidiate obtuse articulated subecostate. Rhizome arborescent. Hand some two ferns with peculiar fructifications. (Moore.)

Genus consisting of a single species.

DIDYMOCHLADINA FUNULATA (Desv.) *Hick. & Lidd.* v. 3 — *Desfont. in Mein Soc. Linn.* vi. p. 252 — *Hook. Gard. Ferns* pl. 17 — *Desfont. in Desfont. l. c.* p. 28 — *Mart. Ic. Pl. Crypt. Bras.* p. 95 t. 28 and 29 f. 1 — *Hook. Gen. Fil.* t. 8 — *D. squamata* *Desv. Journ. Bot. Appl.* 1 p. 5 t. 2 f. 1 — *D. truncatula* *J. Sm. Gen. of Fern.* p. 84 — *D. dimidiata* *Kunze in Linnæa* xviii p. 122 — *Schub. Fil. Suppl.* p. 200 t. 54 — *Purp. and Raws Syn. Fil. Afr.* p. 15 — *Aspidium truncatulum* *Sw. Syn. Fil.* pp. 52 and 212 *Willd. Sp. Pl.* v. p. 216 — *Aspid. squamatum* *Willd. Sp. Pl.* v. 250 — *Monochlamis sinuosa* *Gaudich. in Freyc. Voy. Bot.* 310 t. 12 f. 3 — *Diplazium pulcherrimum* *Raddi Ic. Bras.* p. 42 t. 3 — *Onchitis ramosa* *DC. Flum. Fil.* 43 t. 56

The specimen figured is from Birmah (*Lev. C. S. 1. F. 11 h*.)

Hab. Tropical America Brazil N. Grenada Andes of Ecuador and Peru W. Indian Island Java Luzon Birmah S. Africa Natal Madag. and East of Cape of Good Hope Island.

PLATE XXXV









## ADIANTFÆ

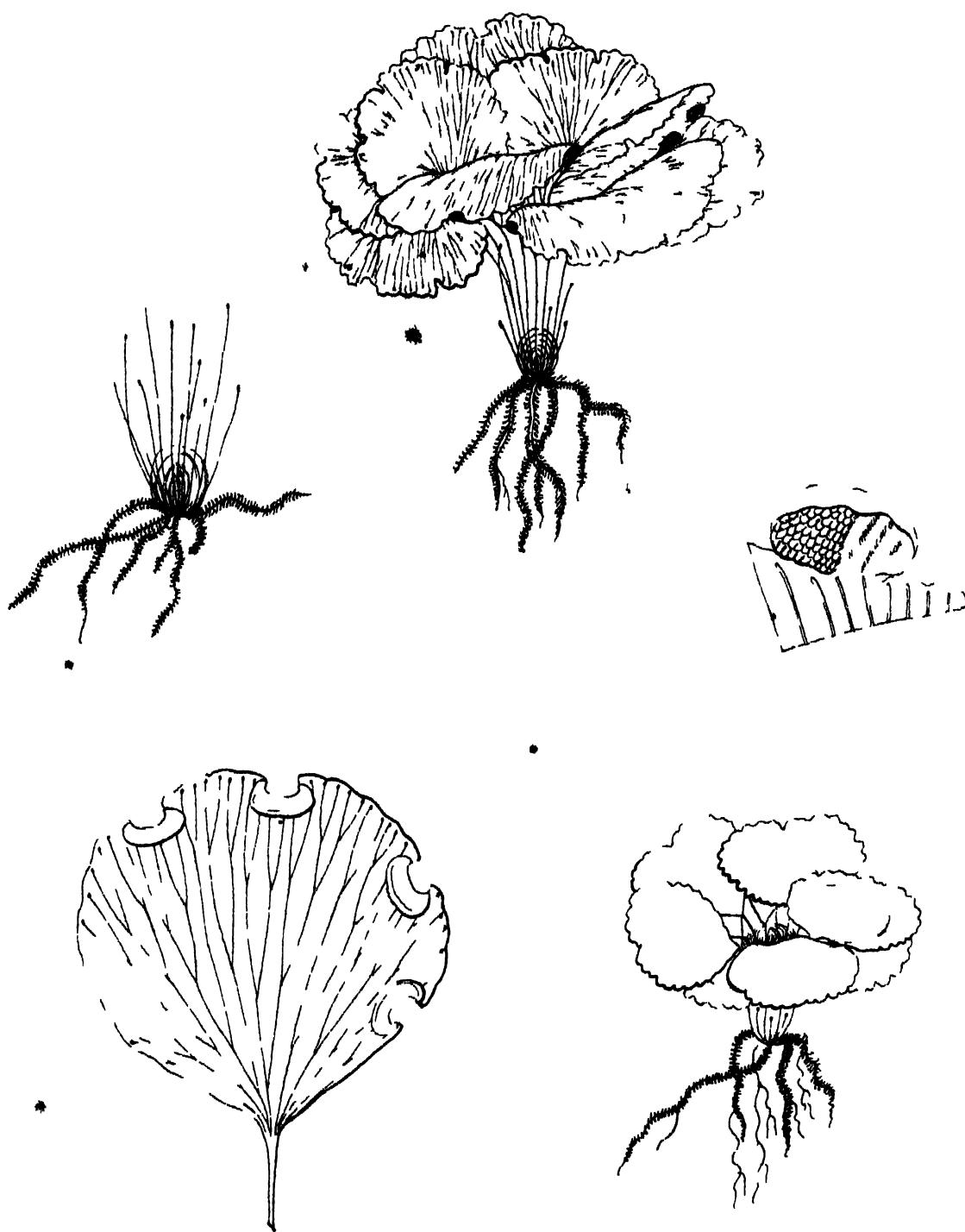
ADIANIUM (See Ferns of Southern India p 1)

**ADIANIUM PARISHII** (Hook) Small caespitose no distinct caudex roots few fibrous tomentose fronds orbicular  
 sterile ones orenato dentate, fertile ones pauci (3 or 4) lobate sinuses deep serriferous veins originating  
 from the base flabellate divergent repeatedly dichotomous stipes slender filiform ebeneous black shining articulated at the summit ~  
*Hook Sp Fil n 237 and Fil Exot 1 pl 51*

The specimens figured are from Moulmein (The Rev C S P Parish)

Hab Moulmein on a limestone rock (called Iwa Kabin) 2000 feet elevation

PLATE No. VII



*Adiantum Parvula*  
(Rock)





## ADIANTLÆ

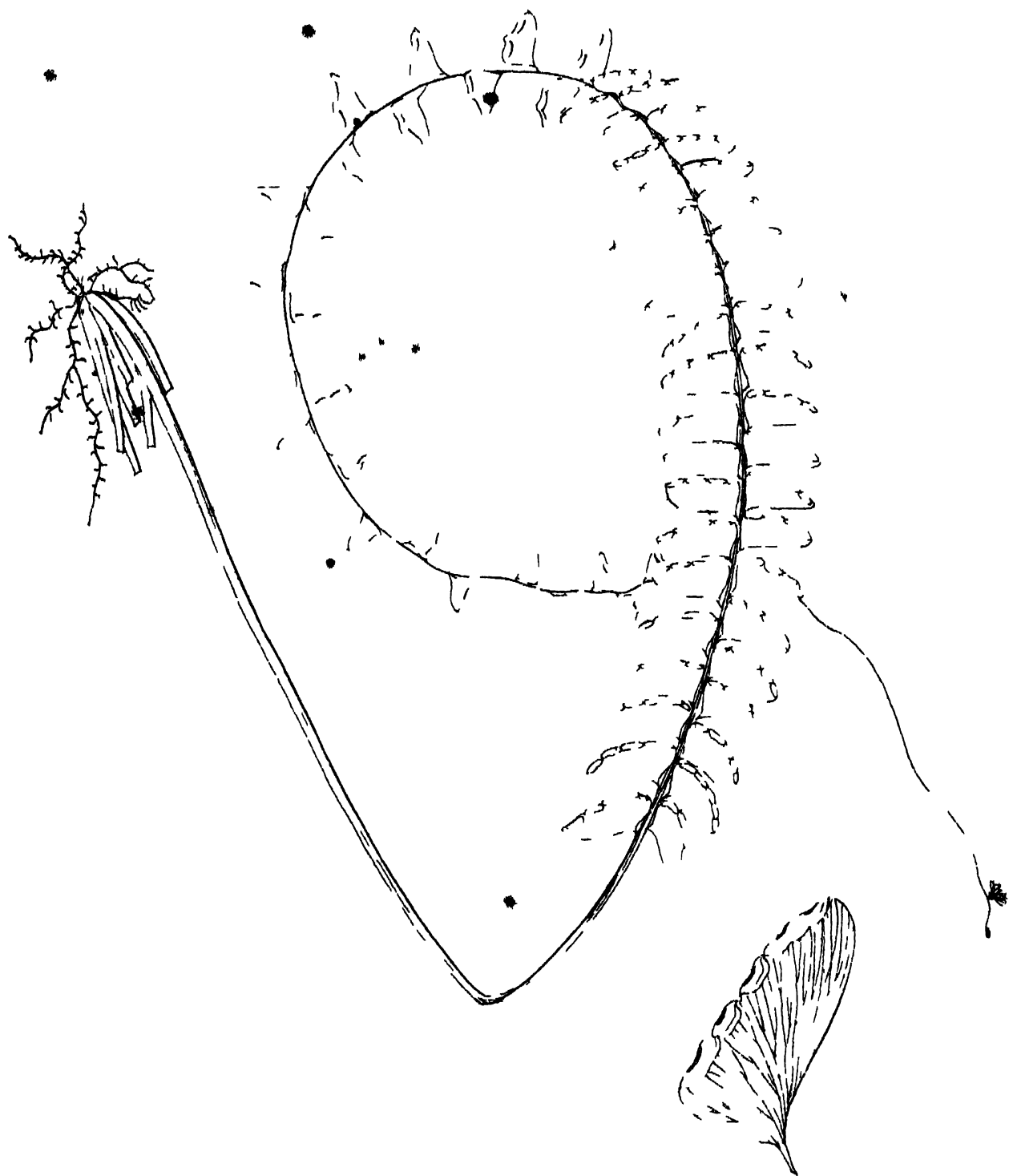
**ADIANTHUM EDGEWORTHII** (Hook.) Everywhere glabrous fronds linear oblong elongated attenuated and often rooting at the apex and there bare of pinna. pinnae nearly sessile alternate dimidiate oblong rather acute the upper base truncated and parallel with the rachis superior margin obscurely lobed rather more so in the sterile pinnae indistinct lobes truncated and bearing the sori one on each lobe sori oblong elongated approximate stipes elongated slender and as well as the rachis beneath glabrous *Hook Sp*  
*Ind* 14

*Nearly allied to A. caudatum but pinnae nearly entire*

The figure is taken from Sir W. Hooker's *Species Indicum*

**Hab** Mooltan, (Punjab)

PLATE No XVII



*Selaginum Elymense*  
 Hook.







## ADIANTEÆ

**ADIANTUM EMARGINATUM** (Bory) Fronds bi tri pinnate pinnules obcordato cuneate sterile ones serrulated at the apex sori oblong — *Willd* — *Bory in Willd Sp Pl* v 419 — *Hook Sp Fil* n 39

The figure is taken from Sir W Hooker's plate of Dr Wight's specimen from the Madras Peninsula I have not been fortunate enough to find it unless I have confounded it with *A Æthiopicum* Sir W Hooker says it has quite the habit of *Æthiopicum* but with sori resembling both as to position and form those of *A Capillus lenis*

Hab Isle of Bourbon Madras Peninsula, Malacca

PLATE No XVIII



*Adiantum emarginatum*  
(Willd.)





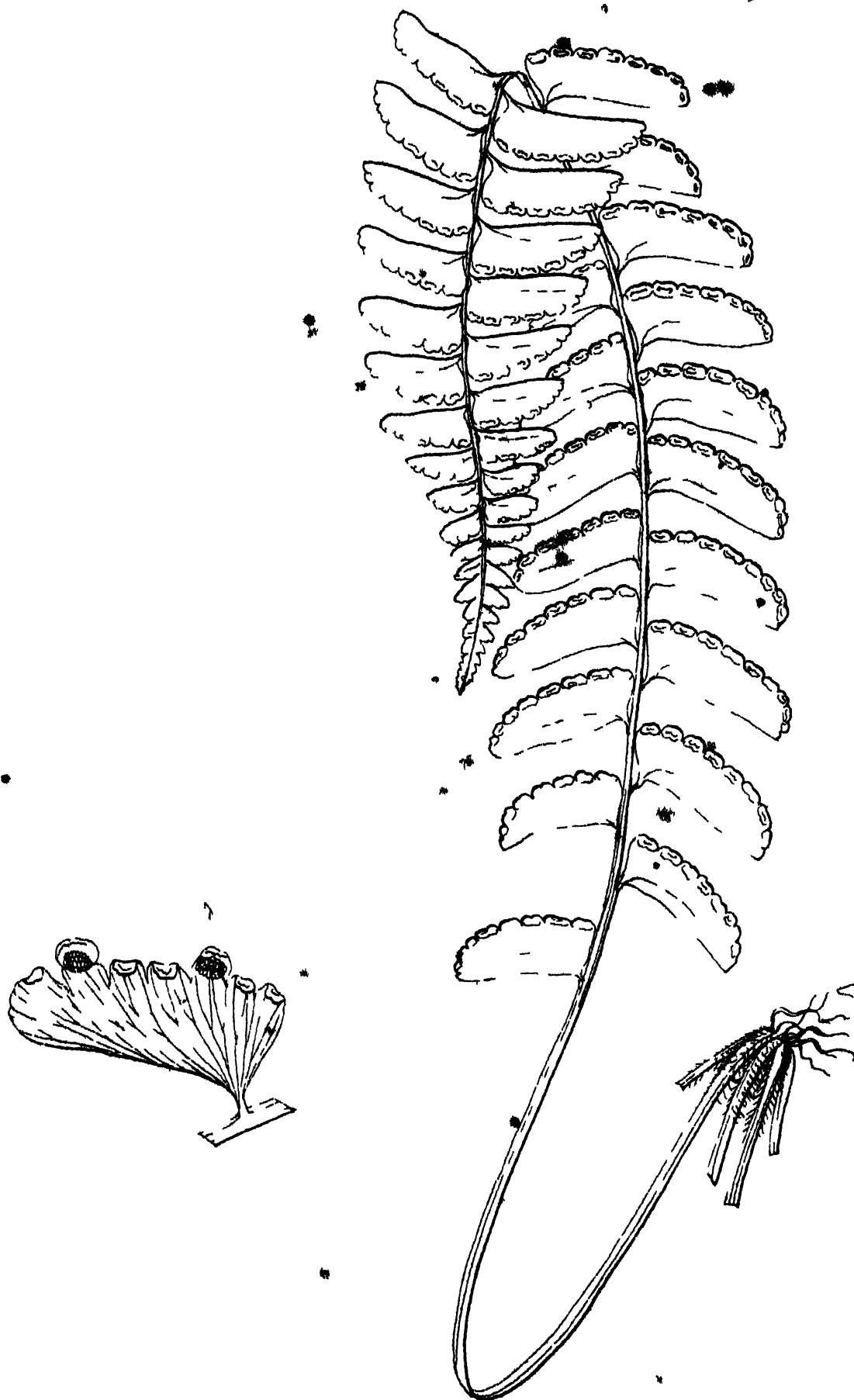
## ADIANTEÆ

**ADIANTUM SOBOLIFERUM** (Wall) Everywhere glabrous fronds (a foot high often soboliferous *Wall*) broadly lanceolate pinnated pinnæ sub membranaceous sessile or lower ones only on very short petioles semi elliptical slightly falcate obtuse the upper base truncated and parallel with the rachis upper margin rather equally lobed sterile ones denticulate lobes soriferous, soon sub reniform stipes obnoxious rachis and stipes with a membranous margin on each side!—*Hook Sp Fl* ii 13

The figure is taken from Sir W Hooker's *Species Filicum*

Hab Burmah

PLATE No XLX



*Adiantum soboliferum*  
(Wall.)







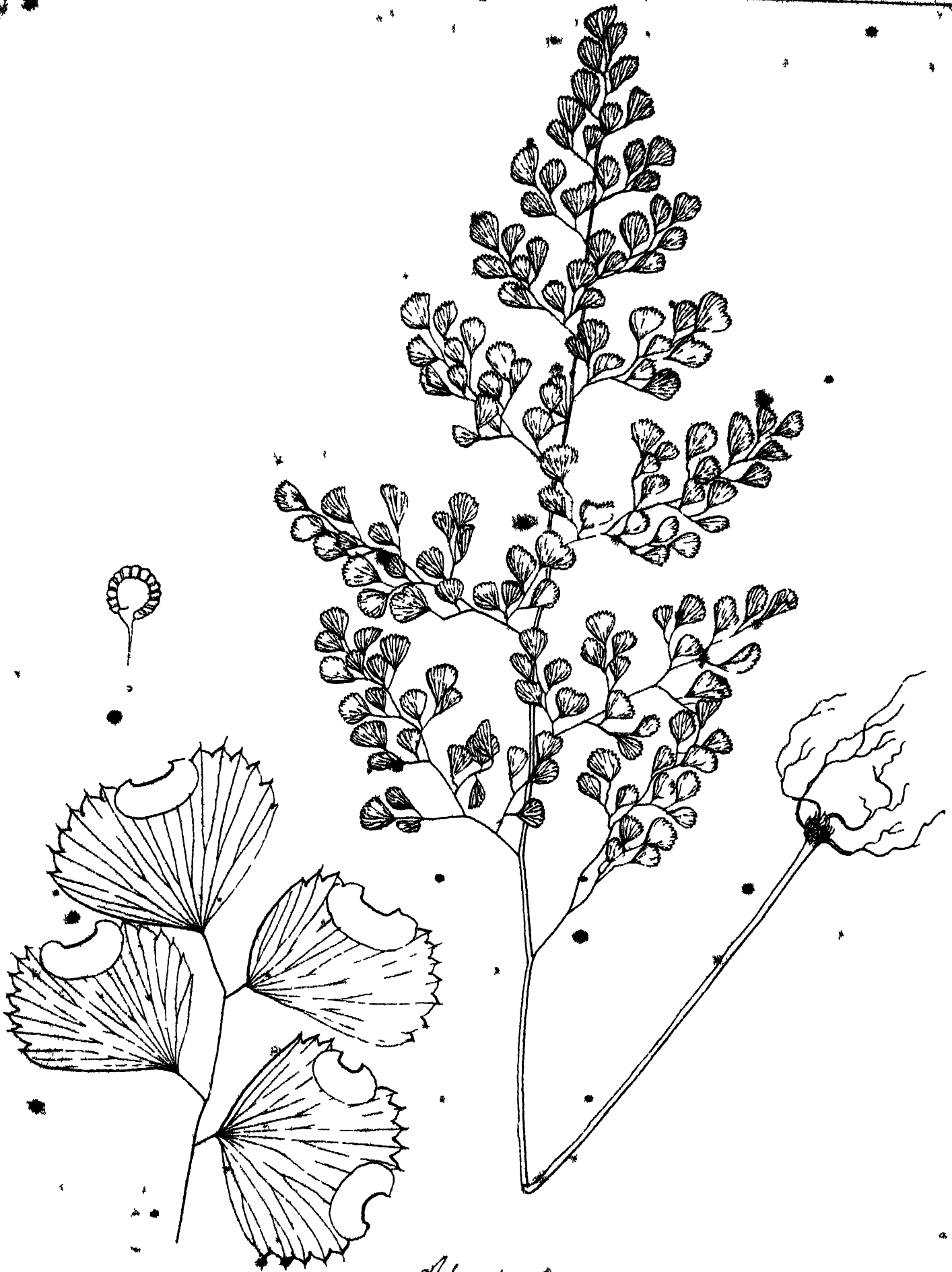
## ADIANTEA

**ADIANTUM VENUSTUM** (Don) Rather small ovate tri pinnate, pinnales firm membranaceous chartaceous glabrous and slightly glaucous beneath shortly petiolulate obovate cuneate rarely sub rhomboid acuminate striated the superior margin rounded scarcely even or but slightly 2 or 3 lobed finely dentate serrate fertile lobes with 2 rarely 3 notches each notch bearing a rather large sorus at the bottom involucre reniform cordate sub membranaceous, stipes and slender rachis everywhere ebeneous glossy glabrous — *Hook Sp. Fil.* 11 40 — *A. venustum* Don *Prod. Fl. Nep.* 16 — *Wall. Cat.* 81

The specimen figured is from Dalhousie (Captain Dyas) \*

Hab. Nepaul, Simla Mussoorie Sroenuggur Kamroop Meerut, Khasia (6500 elevation) Afghanistan

ILLATF No. 11



*Adiantum venustum*  
(Don)





## PTERIDEÆ

## ONYCHIIUM (See Ferns of Southern India p 10)

**ONYCHIIUM LUCIDUM** (Sp.) Caulis creeping & stipites six inches to a foot and more long and as well as the rachises pale brown or stramineous frond a foot and more long ovato acuminate membranaceo coriaceous glossy 3 4 times pinnatisected (primary and secondary divisions pinnated) segments uniform or nearly so in the sterile and fertile ones all narrow linear a little tapering below ultimate ones moderately long all gradually acuminate (not mucronate even in the fertile ones) sori oblong short occupying nearly the whole of the back of the segments involucre white or cream colour membranaceous meeting at the back — *Hook Sp Fil* n 121 — *Spreng Syst Veget* iv p 66 — *Hook Gen Fil* t xi — *Cheilanthes lucida* Wall Cat n 69 — *Cheilanthes contigua*, Wall Cat n 69, — *Leptostegia lucida*, Don *Prod Fl Nep* p 14 — *Scolopendrium lucidum* Hamilton's MS (*vide Don*)

The specimen figured is from Nynce Tal (Mr Oldham)

Hab Kumaon, Nepaul (700 to 7,500 feet elevation) Mussoorie Guwahati Sikkim, Khasya Mishmee Nynce Tal

PLATE No XXI









## PTERIDÆ

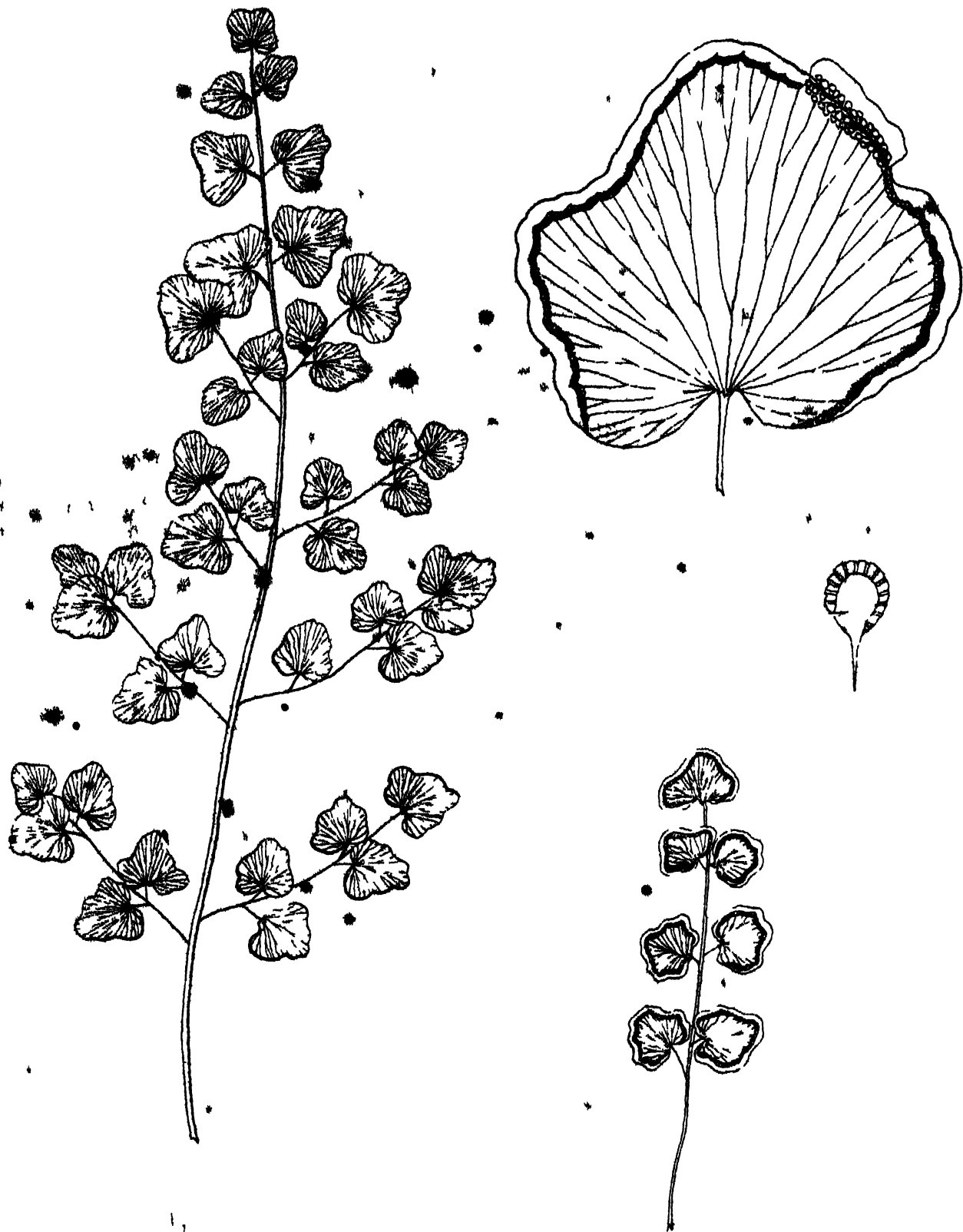
PTERIS (See Ferns of Southern India p 11)

**PTERIS CALOMELANOS** (Link) Glabrous caudex short thick very scaly fronds subspithameous cæspitose sub coriaceous oblong triangular bipinnate pinnules all petiolulate cordato—(rarely subhastato)—triangular very obtuse entire sometimes sub trilobate or sinuate at the margin the sinus deep and narrow, veins dichotomously radiated sori continuous involucre membranaceous stipites short scaly at the base and as well as the slender rachises and petioles black obaceous very glossy *Hook Sp Fil* ii 140 — *Link Fil Hort Berol* p 61 — *Fee Gen Fil* p 129 — *Allosorus calomelanos Presl Tent Pterid* p 153 — *Hook Bot Mag t* 4700 — *Pteris calomelanos Sw Syn Fil* p 106 — *Willd Sp Plant v* p 393 — *He in Linn* p 525 — *Schlecht Adumb Fil Cap* 43 t 24, — *Platyloma, J Sm Pteris hastata Thunb (not of others)*

The specimen figured is from Simla

Hab S Africa, elevation 400 to 1000 feet—Graham's Town Macalisberg Isle of Bourbon — Simla Kumaon

PLATE No XXII



*Pteris calomelanos*  
(Link.)





## PTERIDEÆ

**PTERIS DACTYLINA** (Hook.) 1 inches to 1 foot high caudex creeping sending out wiry fibres fronds sub coriaceous membranaceous rather rigid 2 6 inches long digitate pinnæ 3 5 subradiate linear sessile slightly tapering below much and narrowly acuminate the sterile portions coarsely and deeply spinuloso serrate especially towards the apex involucres rather broad subintramarginal membranaceous close pressed veins simple stipites numerous tufted very slender and as well as the midribs of the pinnæ (very prominent beneath) stammineous *Hook Sp Fil* n 160

Hab Sikkim—Himalaya, (Dr Thomson)

PLATE No XXIII



*Vitis dactylina*  
Hook







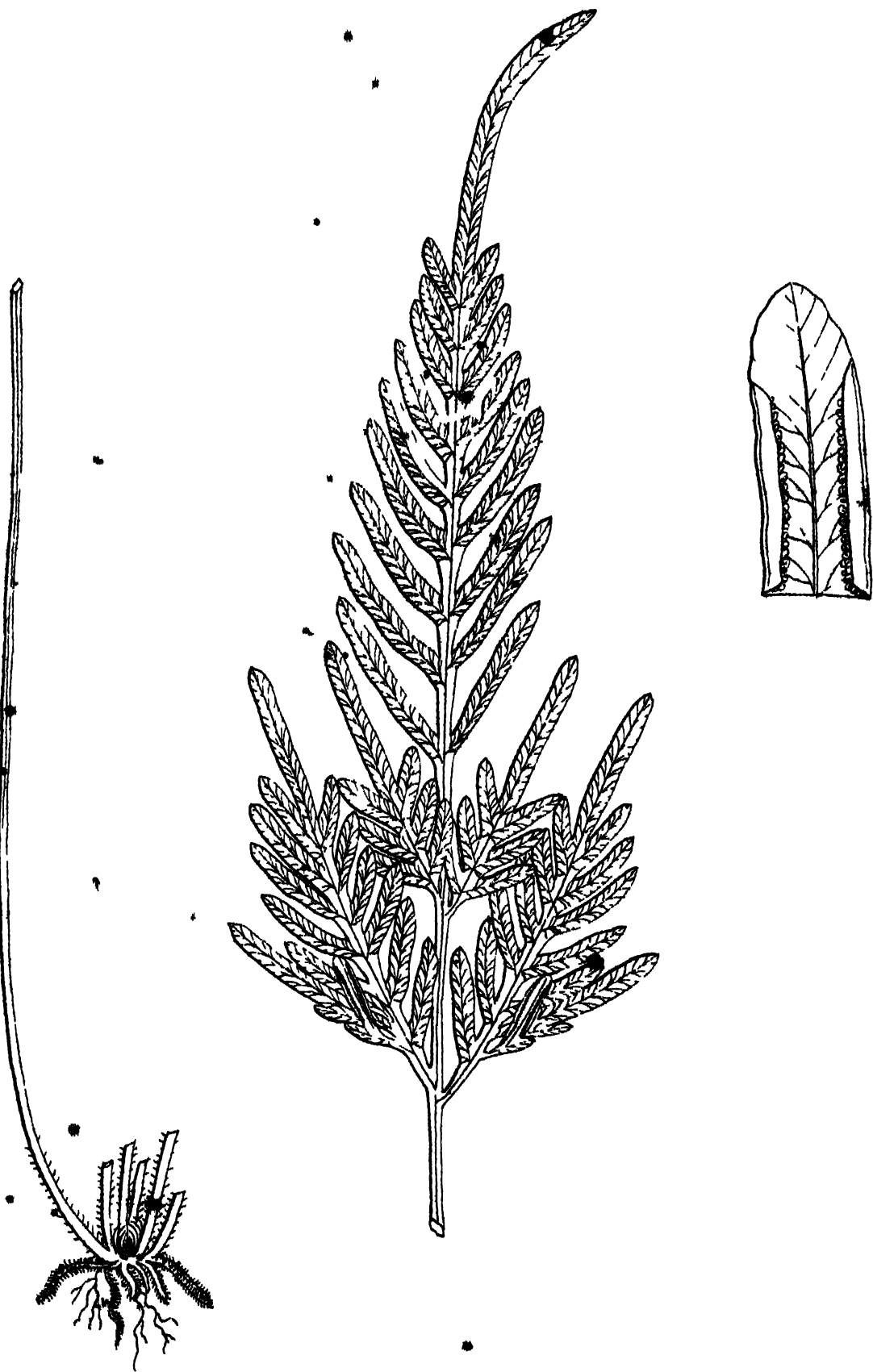
## PIERIDE 1

**PTERIS GRIFFITHII** (Hook.) A foot and more high and slender graceful caudex none roots of tufted fibres frond ovate lanceolate sub membranaceous pinnate upper pinnæ simple 2 or 3 of the lower pairs again pinnated simple pinnæ and pinnules exactly linear  $\frac{1}{2}$  an inch to an inch and a half long obtuse mostly opposite every where entire sessile with the base adnate and decurrent so as to form a narrow wing to the rachis lowest pinnules of the inferior pinnæ sometimes again divided terminal pinnule always elongated veins distant once forked veinlets divaricating sori continuous involucre sub intramarginal membranaceous not reaching to the apex stipites slender longer than the fronds stramineous brown and a little scaly at the base —*Hook Sp Fil* ii 170

The figure is taken from Sir W. Hooker's Species Filicum

Hab. Mishmet Assam

PLATE No. XLIV



*Pteris Griffithii*  
(Hook.)





# PLATE I

CAMPFERIA (See Ferns of Southern India p. 14)

**CAMPFERIA WALICHIANA** (Ag.) Frond ample glabrous sub membranaceous 3 partite lateral branches compoundly divided terminal one elongated pinnated pinnae numerous sessile 4 to 6 inches long linear lanceolate acuminate deeply pinnatifid segments linear lanceolate obtuse sterile ones serrulate all approximate about half an inch long basal veins monarcuate the rest free and forked rarely a solitary arclet at the base of the costule stipes very long 5 to 6 feet stout rich chestnut and as well as the paler coloured rachises very smooth and glossy — *Hook. & Fil.* ii. 206 — *Iterum Wallichiana Ag. Sp. Gen. Pterid.* p. 69 — *It. umbrosa Wall. Cat.* n. 109 (not of *It.*) — *It. pellucens Ag. Sp. Gen. Iterid.* p. 434 — *Pt. connexa J. Sm. & Phil. in Hook. Bot. Journ.* iii. p. 405 (name only) — *Pt. pectinata Don Prodr. Fl. Nepal.* p. 15 — (Agardh refers to this *Pt. aspericaulis*, Wall., which is however a slight var. of *Pt. quadrifurcata*.)

The specimen figured is from Sikkim (Dr. Thomson)

Hab. Kumaon, Garhwal, Sikkim, Khasya, Luzon

PLATE No. XXV



*Camptorhiza Wallichiana*  
(Ag.)







# LITOBROCHIA

LITOBROCHIA (See Ferns of Southern India p 73)

**LITOBROCHIA PLDANA** (L.) (caudex short thick erect or declined copiously rooting fronds fasciculate when mature coriaceous opaque cordate tripartite pedate lateral primary divisions bipartite on the inferior side or on both sides pinnatifid terminal one pinnatifid generally cuneate and narrowed at the base the segments with entire lobes or again pinnatifid ultimate ones oblong with more or less acute sinuses the margin of the sterile plant crenulated sori continuous involucre narrow entire veins everywhere anastomosing so as to form a network of oblong hexagonal areoles stipules terete ebony black hispid at the base — *Hook Sp Fil* ii. 209 — *Latis pedata* *Linn Sp Pl* p 1332 — *Sw Syn Fil* p 105 — *Langsd et Fisch Ic Fil* p 12 et 20 — *Willd Sp Pl* p 358 — *Schreb Ind* p 91 et 100 — *Raddi Fil* t 65 f 3 et 66 and 66 b — *Br Prodr Nov Holl* p 111 — *Hook Bot Mag* t 3 247, and *Fil Exot* t 34 — *Pt palmata* *Willd Sp Pl* v p 357 — *Pt collina* *Raddi Fil Bras* p 41 et 65 f 1 2 — It varies, *Raddi l c* t 64 — *Pt Mysurensis* *Wall Cat* n 87, 1 — *Pt polytricha* *Hook in Linn* t xxiii p 1 249 and 322 — *Litobrochia pedata* *Pr Tent Pterid* p 119 — *Moore Ind. Fil* i p xlii — *Cissoclema pedata* *J Sm Gen of Linn* p 17 and *En Ferns in Hort Kew* p 14 — *Doryopteris pedata* *J Sm Cat Kew Ferns* p 4 and *Cat of Cult Ferns* p 35 — *Lc Gen Fil* p 133 — *Hemionitis profunde laciniata* *de Flum Am* p 24 et 34 *Ind* p 130 et 1 2

The specimen figured is from Malacca (J. C. Parry)

Hab West Indies Jamaica St Domingo Cuba Martinique Brazil Island of Trinidad Peru Chacapoyas Columbia New Granada Venezuela Guipagos Tropical New Holland — Jalney Hills (Dr Wight) Nilgus (Rev E Johnson,) in *Herb Hook* — Burmah







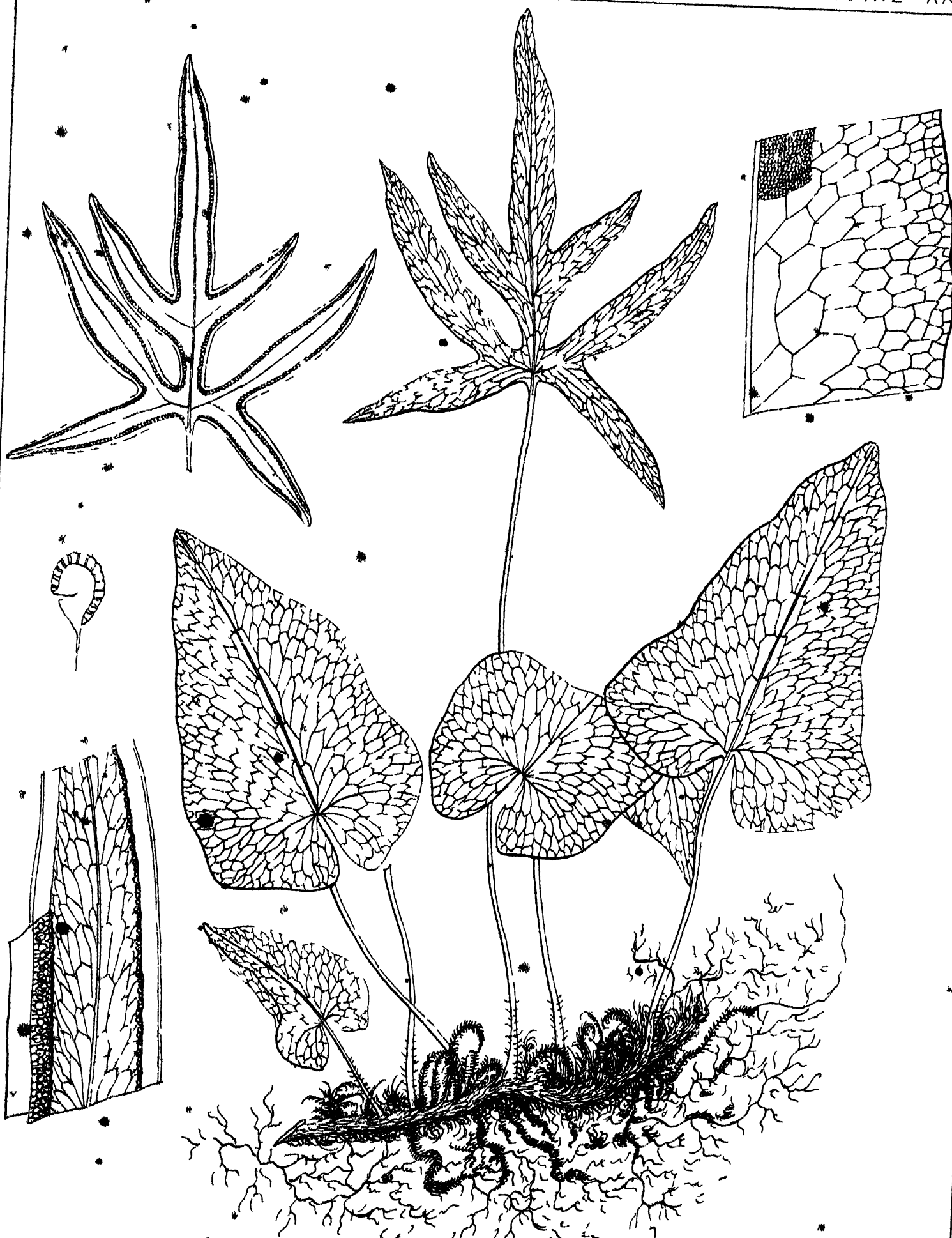
## LITOBPOCHIA

**LITOBPOCHIA LUDENS** (Wall) Culm 2 to 3 or 4 inches thick, 1 thicker than a to v. quill, scaly, throwing out capillary woolly fibrous roots. fronds remote in the culm, long, stipitate, mucous, opaque, beneath translucent and undivided, hastately 3-lobed or deeply 3-lobed or 3-lobed and pinnate, the terminal lobes 3 or pinnatifidly 3-lobed, the lateral lobes pinnatifid, more or less deeply on the inferior side (*ad imbricatis*) segment acuminate, broad lanceolate or long linear, veins everywhere finely reticulated, the areoles of long and mostly parallel or nearly so with the costa and margin, soon on the most deeply divided and narrowest fronds continuous, stripes very long, and as well as the main rachis beneath black, ebeneous — *Hock 57, Tab. 10* — *Pteris ludens* Wall Cat. n. 88 — *Doryopteris* Willd. in *F. Sm. In Phil. Philipp. in Hort. Bot. Journ.* in p. 101

The specimen figured is from Moulmein (Java, Dutch)

Hab. Borneo, Luzon

LITOBPOCHIA



*Litobrachia ludenii* (Fall.)







## LINDSÆA

(See Ferns of Southern India p. 7)

**LINDSÆA LOBBIANA** (Pock.) Cander somewhat creeping fronds tufted pinnate linear lanceolate much acuminate lower pinnæ remote the rest approximate all of them slightly petiolate pinnule submembranaceous subnitent obliquely flabellate or half ovate the superior base truncate upper margin curved (convex) lobate serriferous, sori interrupted linear, stipes rather short and rachis brown — *Hook. & Grev. Bot. Beechey* 205

The specimen figured is from Moulmein (Rev. J. H. Parry)

Hab. Burmah, Java

PLATE No. XXVIII







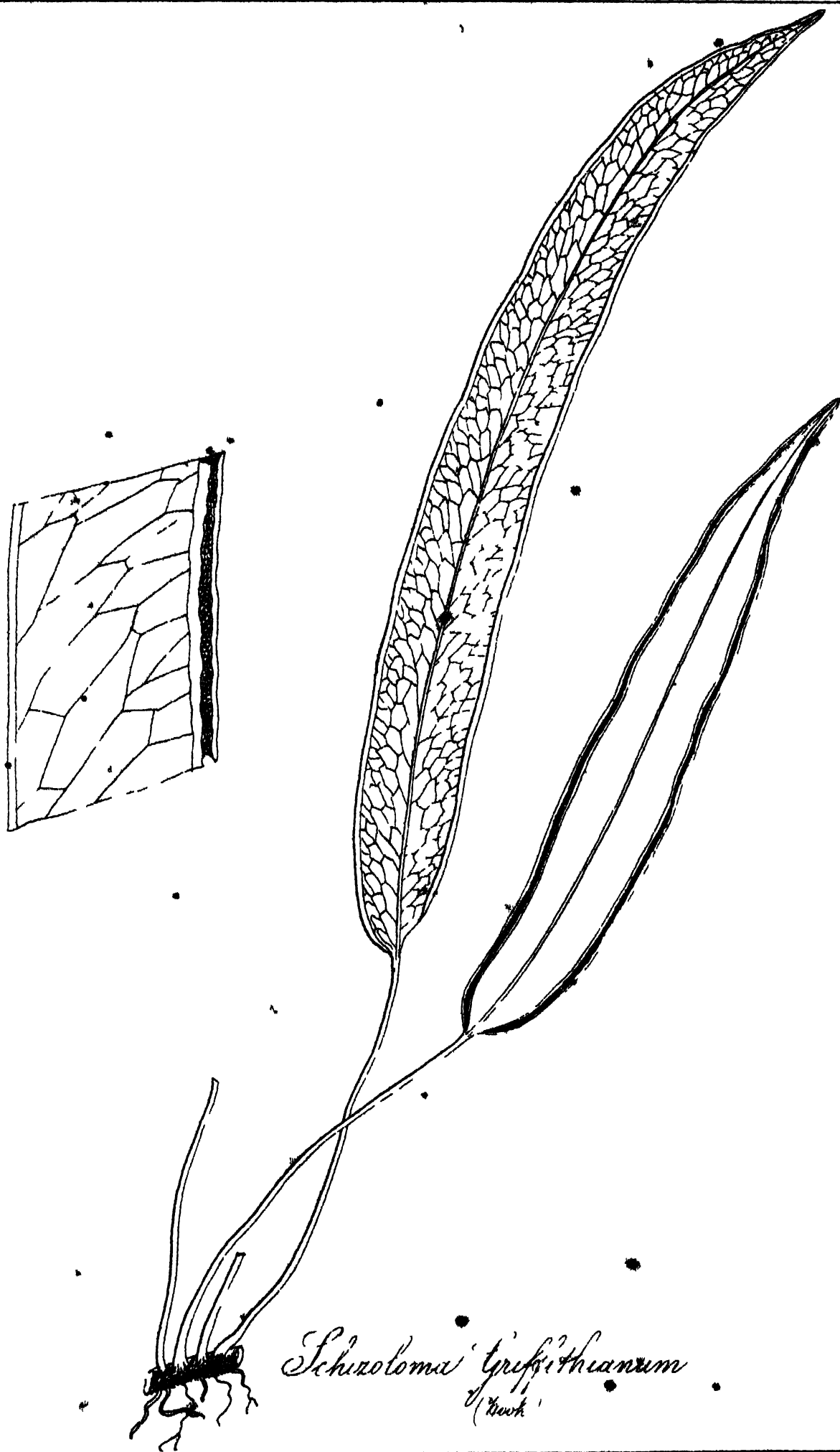
## LINDSÆÆ

SCHIZOLOMA (See Ferns of Southern India, p. 9.)

**SCHIZOLOMA GRIFFITHIANUM** (Hook.) Lax and flaccid caudex creeping short stipites shorter than the elongate aneolate simple membranaceous costate frond, veins reticulated sorus continuous round the entire margin — *Hook Sp. Fil.* 1: 219

Hab. Mergui, Burmah

\* PLATE No. XXIV



*Schizoloma triphythianum*  
(Hook.)







## TRIBE GLEICHENINFE

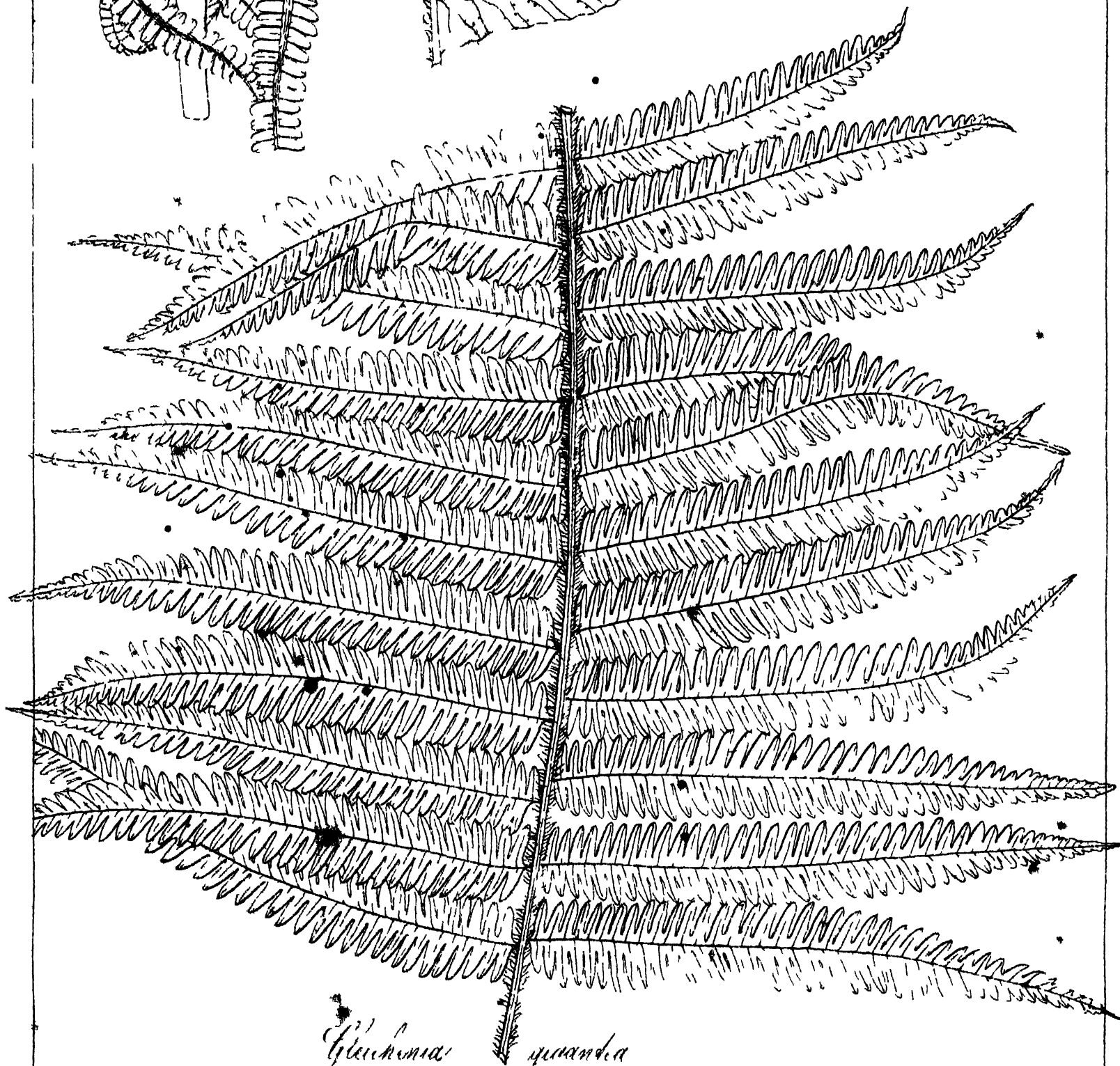
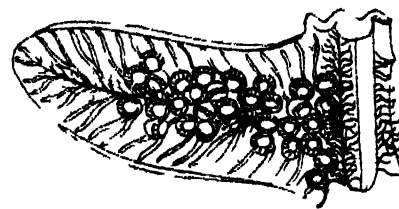
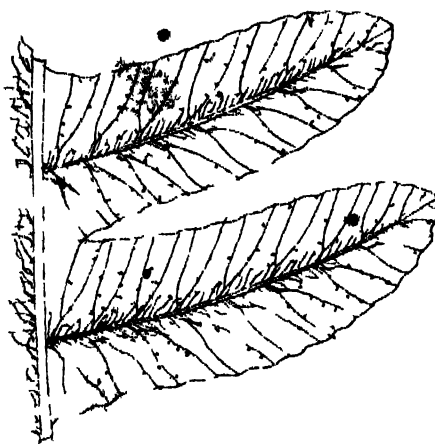
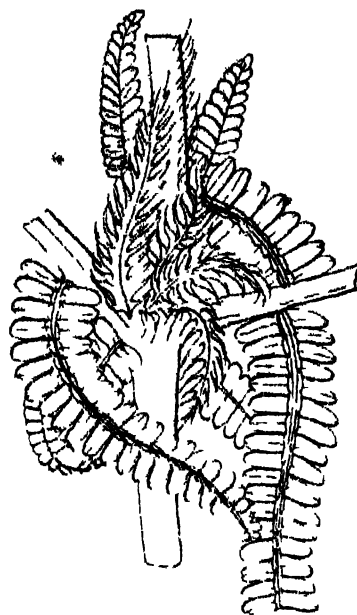
GLEICHENIA (See Ferns of Southern India, p. 20)


**GLEICHENIA GIGANTEA** (Wall) primary pinnae opposite oblong acuminate its rachis above with a slightly elevated very obtuse margin secondary lanceolate acuminate alternate deeply pinnatifid segments oval oblong very obtuse entire with an elevated crest at the base below forming an interrupted marginal line to the rachis which beneath as well as the costa is woolly, scarcely glaucous capsules 3 — *Hook Sp Fl* 1, *Wall Cat n* 107 — *Hicriopteris speciosa*, Presl — *Mesozorus giganteus*, Hassk — *Mertensia gigantea*, Wall *Hb*

The specimen figured is from Sikkim (Thomson)

Hab Assam Nepal Bhotan, Sikkim, Khasi, China Fokien Java

PLATE No LXX



*Glechoma*  *hederacea*





# ASPIDIÆ

## POLYSTICHUM (See Ferns of Southern India p 41)

**POLYSTICHUM STIMULANS** (Kunze) Caudex short stout oblique very scaly stipites densely tufted 2 4 inches long chaffy flexuose slender and tawny as is the rachis fronds sub coriaceous 4 6 8 inches long linear or oblong lanceolate acute pinnate pinnæ lax distant distinctly petiolate from an oblique truncate cuneate base rhomboid or triangular with generally a spinose auricle at each base and with two or three large sharp serratures which as well as the apex are terminated with a spine rarely one of the auricles becomes a free pinnule sori few in two rows one on each side of the costules — *Hook Sp Fil* # 12 — *Herb Jde Metten Aspid* p 43 — *Polystichum P. Tent Pterid* p 83 — *Aspid pungens Wall Cat n 369 (not Hfs)* — *Aspid ilicifolium, Don Liodi Acq* 1 3 (not *Fec*) — *Aspid sagittatum Jacquem Mss in Herb Mus Paris and Herb Hook*

The specimen figured is from Sikkim (Dr Thomson) and partly from Sir Will Hooker's plate in '*Species Filicum*

Hab Nepal, Kumaon (elevation 9 000 feet) Simla Valley of the Jumna Sikkim, Chingtam, Tambur river

PLATE No XXXI,



*Polystichum stimulosum*  
(Koe)







## ASPIDIUM

**POLYSTICHUM LACHENLINSII** (Hook.) (caudex short oblique stout scaly above stipitate very densely tufted numerous and compact stout mucrosculent 2-4 inches long sub flexuose glossy black or dark brown scaly fronds 4-8 inches long linear lanceolate coriaceous pinnate pinnules the largest less than 1/2 an inch long patent rather distant sessile deltoid-ovate sub pinnatifido crenate rather obtuse sub pinnuloso serrate or unimem serrate in two rows on each pinnule rachis stramineous setaceous paleaceous with whitish appressed scales — *Hook Sp Fil* iv 8

The figure is taken from Sir W. Hooker's Species Filicum

Hab. Sikkim, Himalaya, Lachen

PLATE No XXXII







## ASPIDIEÆ

**POLYSTICHUM (ÆPITOSUM)** (Wall.) Caudex a short thick scaly rhizome scales often ciliated stipites tufted slender 2-6 inches long stramineous as well as the rachis fronds 4 inches to a span and more long oblong—or linear lanceolate acute rather than acuminate chartaceo-membranaceous often glossy pinnated pinnæ rather distant horizontal  $1\frac{1}{4}$  inch long petiolate from an entire obliquely cuneate truncate and obtusely auricled superior base trapezoido-ovate obtuse or acute sharply but scarcely mucronato serrate inferior base incised soon uniscriate on the pinna and the auricles between the costa and the margin, involucres peltate ciliate at length deciduous —*Hook Sp Fl* iv 13 —*Wall Cat n* 367 —*Mettén Asspnd p* 364 —*Polystichum Schott Pr* —*Aspidium obliquum Don Anal p* 43 (*vide Moore*)

The specimen figured is from Nynee Tal, (Oldham)

Hab Northern India especially in the Himalayas (elevation 4—10 000 feet,) Nepal, Simla, Kumaon, Nynee Tal, Lachen Sikkim Bhotan

PLATE No XXXIII









# ASPIDIÆ

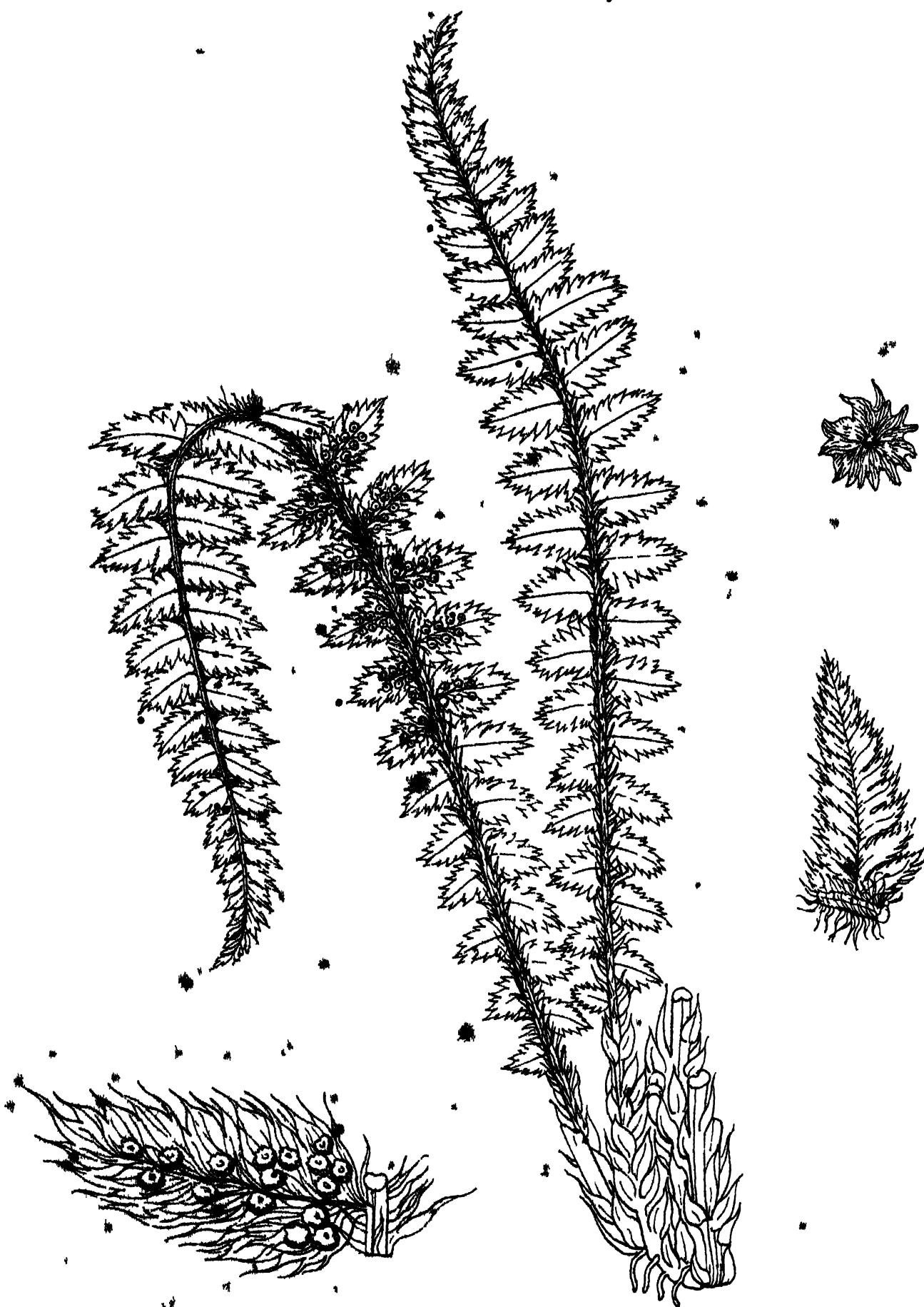
**POLYSTICHUM PRESCOTTIANUM** (Hook.) Caudex short thick erect or declined paleaceous with very large brown scales stipites densely tufted stout 1-4 inches long, and as well as the stramineous glossy rachis and costæ and veins especially beneath villous with soft lax hair like pale coloured scales on the stipe; mixed with large ovate membranaceous ones fronds 1-2 feet long rarely in the broadest part 2 inches wide elongate lanceolate acuminate soft and membranaceous gradually narrowing at the base pinnate or sub bi pinnate pinna ovate oblong sessile tapering to an obtuse apex deeply pinnatifid (except at the very apex) almost to the costa (some of the inferior ones pinnate) lobes or pinnules ovate or oblong without auricle strongly and uniformly serrated the serratures with long soft hair like points serr chiefly on the superior half of the frond in two rows near the costule involucre peltate entire membranaceous — *Hook & Fil* iv 22 — *Aspid Prescottianum Wall Cat n 363* — *Vetten Aspid* 1 48 — *Polypodium Pseudo Lonchitis Jacquemont Mss in Herb Hook* β frond bi pinnate

The specimen figured is from the Himalayas (Dr Thomson) and from Sir W. Hooker's plate in *Species Lilium*

Hab Kumaon, Himalayas from extreme west to Bhotan in the east (elevation 10-12,000 feet)

PLATE 10. 11111





*Polystichum Prenotleanum*  
(Mack)





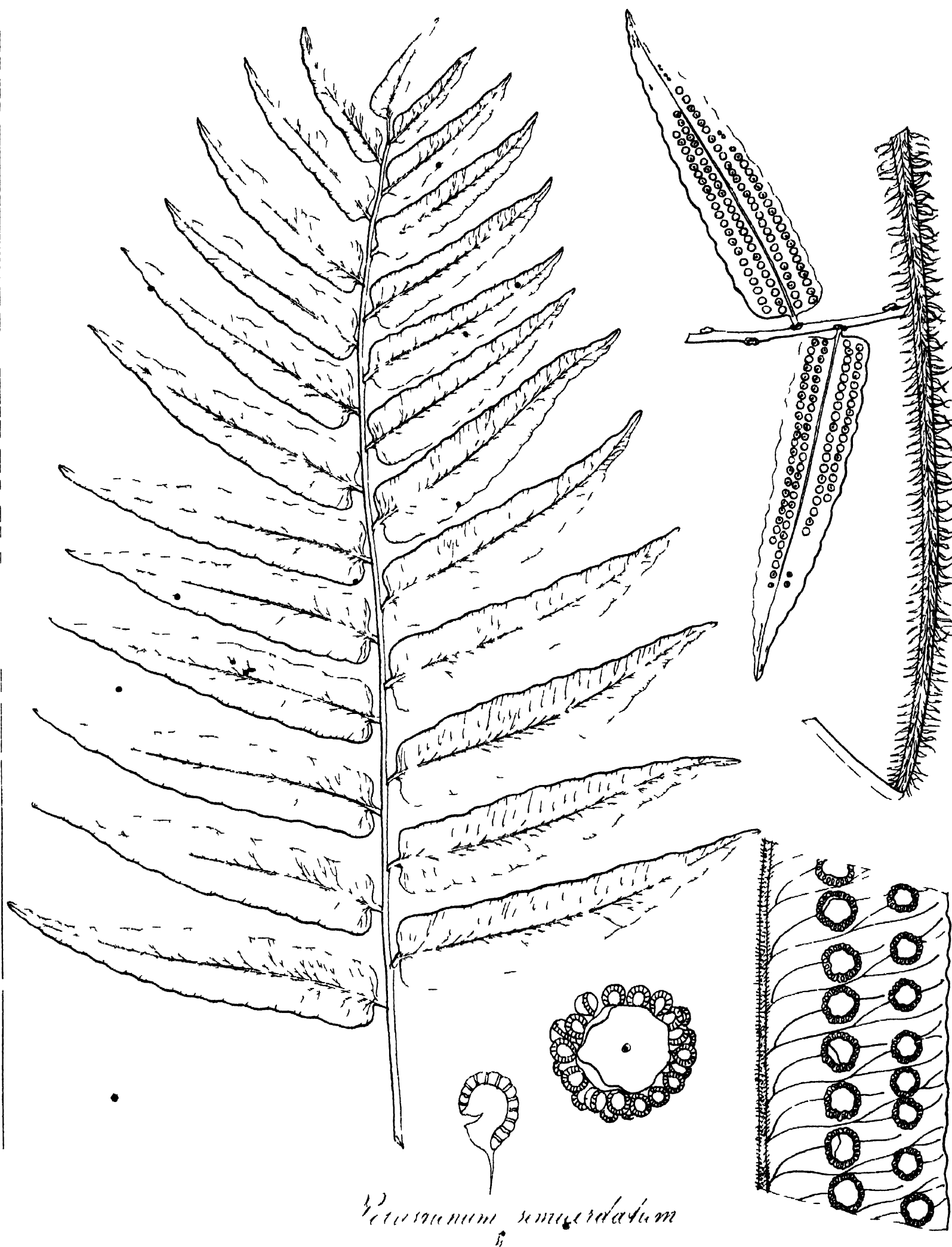
# ASPIDIÆ

**POLYSTICHUM SEMICORDATUM** (Sw) Caudex thick horizontal creeping? very densely clothed with long ( $\frac{1}{2}$  of an inch) subulate scales stipites solitary (not tufted) stout a span and more long shaggy with long slender paleaceous scales at length deciduous, fronds 2 3 feet long broad or ovato lanceolate (8 10 inches wide) coriaceous membranaceous blackish green (when dry) pinnated pinnæ articulated upon the rachis numerous approximate horizontal from a broad sessile shortly petiolated semi cordate base oblong acuminate straight or falcate entire or obtusely crenate (near spinulose) sori mostly on the back of the veinlets in four series two on each side the inner one close by the costa the other between it and the margin veins fasciated involucre slightly convex depressed in the middle suberose—var  $\delta$  truncatum pinnæ at the base on each side transversely truncated

The specimen figured is from Moulmein (Rev C S P Parish)

Hab Twa Kabin Moulmein—This species occurs in slightly altered varieties in America, the W Indian islands, Luzon, Cochin, China, and Borneo

PLATE No XXXV



*Pteris serrulata*  
♂







## ASPIDIEÆ

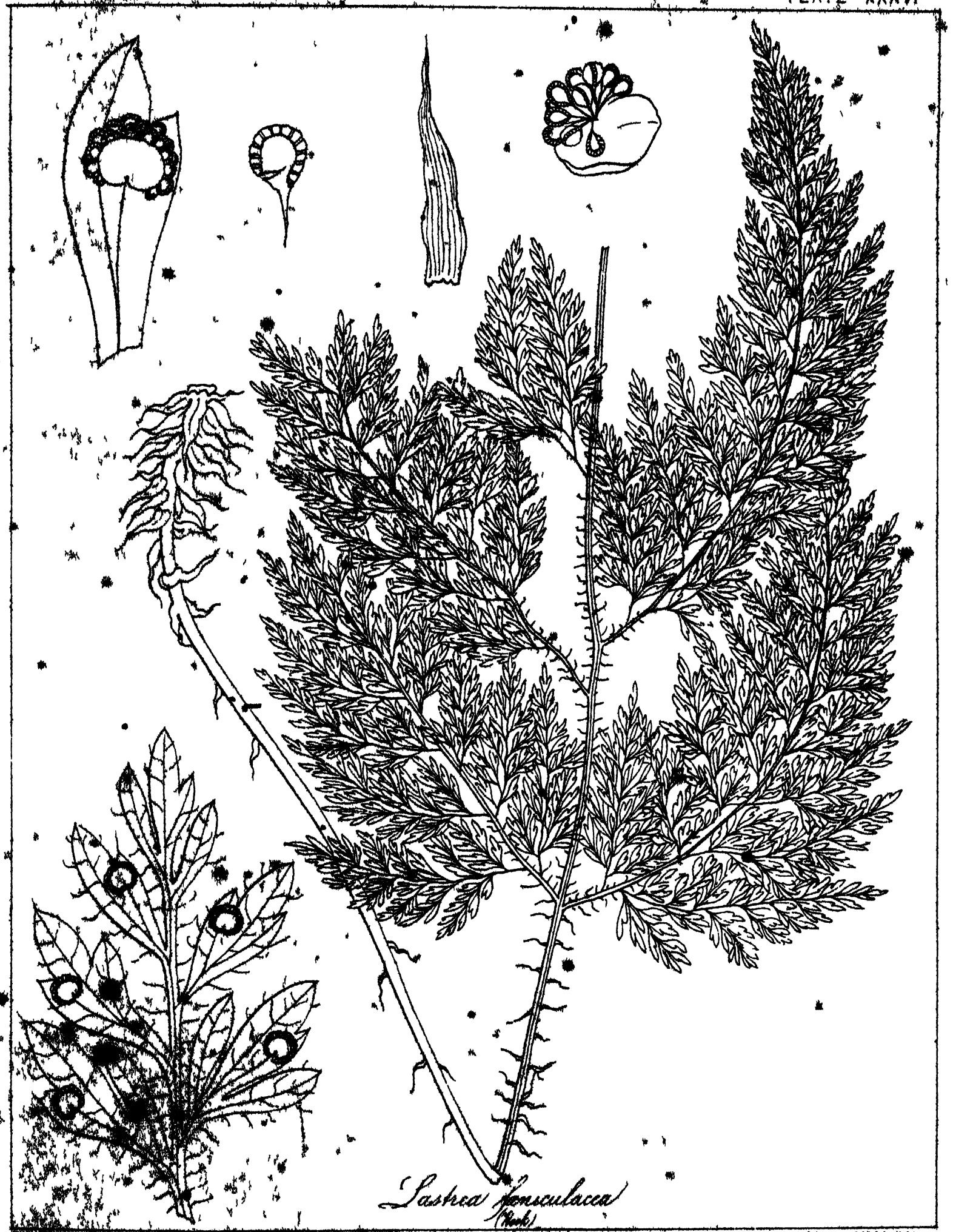
LASTREA (See Ferns of Southern India p 33)

**LASTREA FÆNICULACEA** (Hook.) Caudex stout creeping densely clothed with twiny satiny ovate acuminate pilaceous scales stipites & span to a foot long, stout below and there pilaceous like the caudex fronds pergaminateous glossy translucent when fresh 1 2 feet and more long oblong ovate acuminate supradecomponently pinnate primary pinnae (inferior ones) from 4 inches to almost a foot long long petioled ovate finely acuminate secondary ones 1 3 inches long also petioled these are broken up into a succession of smaller and lesser pinnae or pinnales and all finely cut into linear acute obscurely costate segments simple or once or twice forked or having a lateral short tooth which generally bears the solitary rather small sorus sori sub globose as broad as the segment or tooth  
 " involucres small dark brown convex reniform of sub coriaceous texture rachises with a few scattered flexuose setae — *Hook Sp Fil*  
 iv 36 — *Z aristata* & *dissecta* *Moore*

The specimen figured is from Sikkim (Dr Thomson)

Hab Chola, Sikkim, (elevation 8—10 000 feet)

PLATE No XXXVI



*Lactuca fonsiculacea*  
(Hook.)





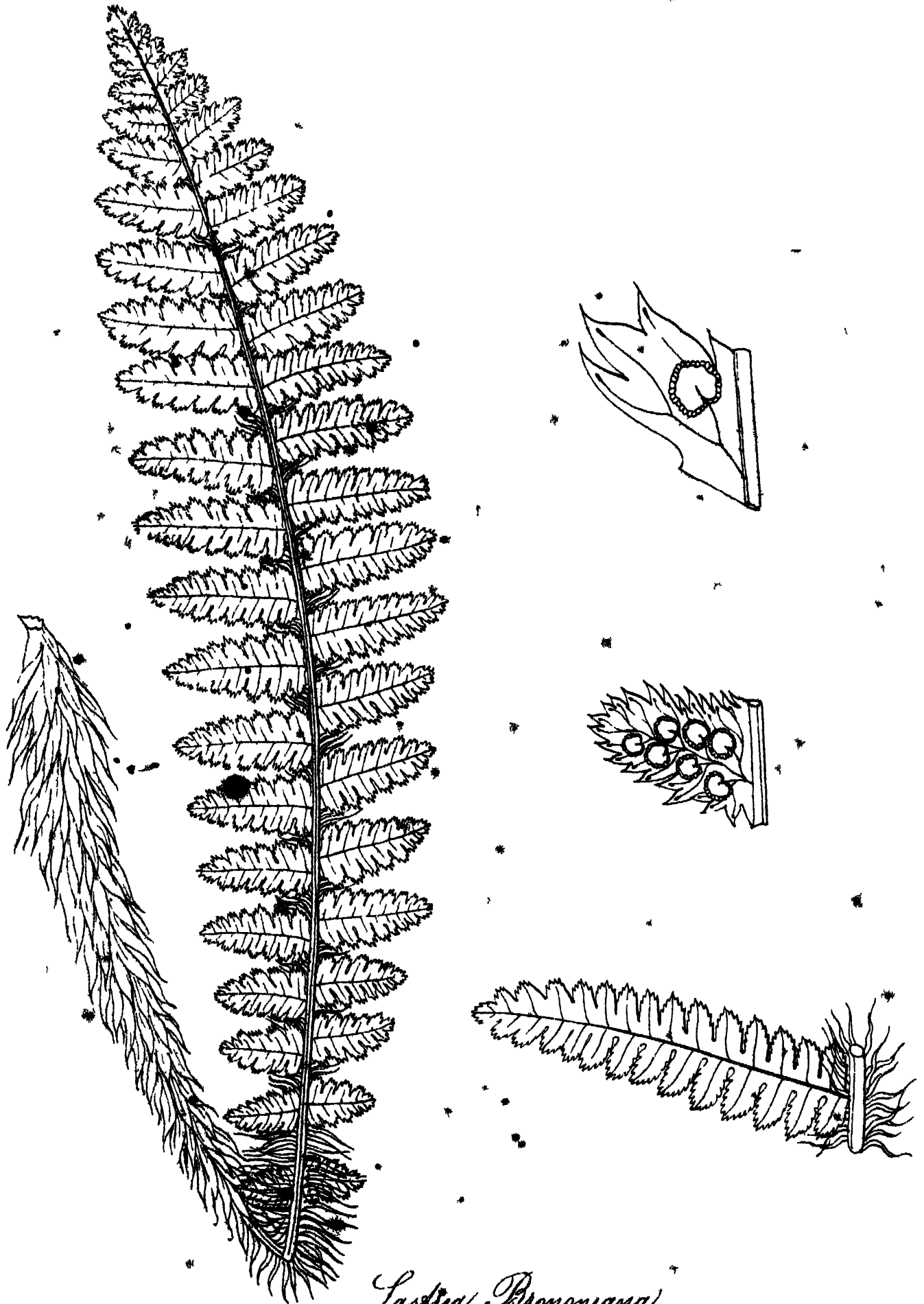
# ASPIDIÆ

**LASTREA BRUNONIANA** (Hook.) Caudex short thick erect clothed as are all the nascent fronds with a dense mass of large subulate lanceolate brown scales  $\frac{1}{2}$   $\frac{3}{4}$  of an inch long, stipites tufted  $\frac{1}{2}$  inches to a span long swollen at the base and as well as the (usually) black rachis squamose with long dark brown glossy lanceolate subulate patent flexuose scales mixed with others quite setiform fronds subcoriaceous membranaceous a span to 12 14 inches long, 2 inches broad, moderately attenuated at the base, very obtuse at the apex oblong lanceolate pinnate pinnæ approximate sessile horizontally patent oblong very obtuse deeply sometimes quite to the rachis pinnatifid segments  $\frac{1}{4}$  inch long horizontal broad oblong or oval obtuse lobate pinnatifid the margins strongly and very sharply serrated the teeth spreading sub setaceous at the points principal veins (or costules) flexuose veinlets forked distant some 3 4 on each side the costule between it and the margin, involucres reniform — *Hook Sp Fil* iv 113 — *Aspidium, Wall Cat n* 344 — *Mettlen Aspid p* 64

The figure is taken from Sir W. Hooker's Species Filicum )

Hab. Kumaon, (elevation 12,000 feet,) Sikkim—Himalaya, 13,000—15,000 feet—Punjab

PLATE No. XXXVII



*Lastia Brononiana*.  
(Hook.)







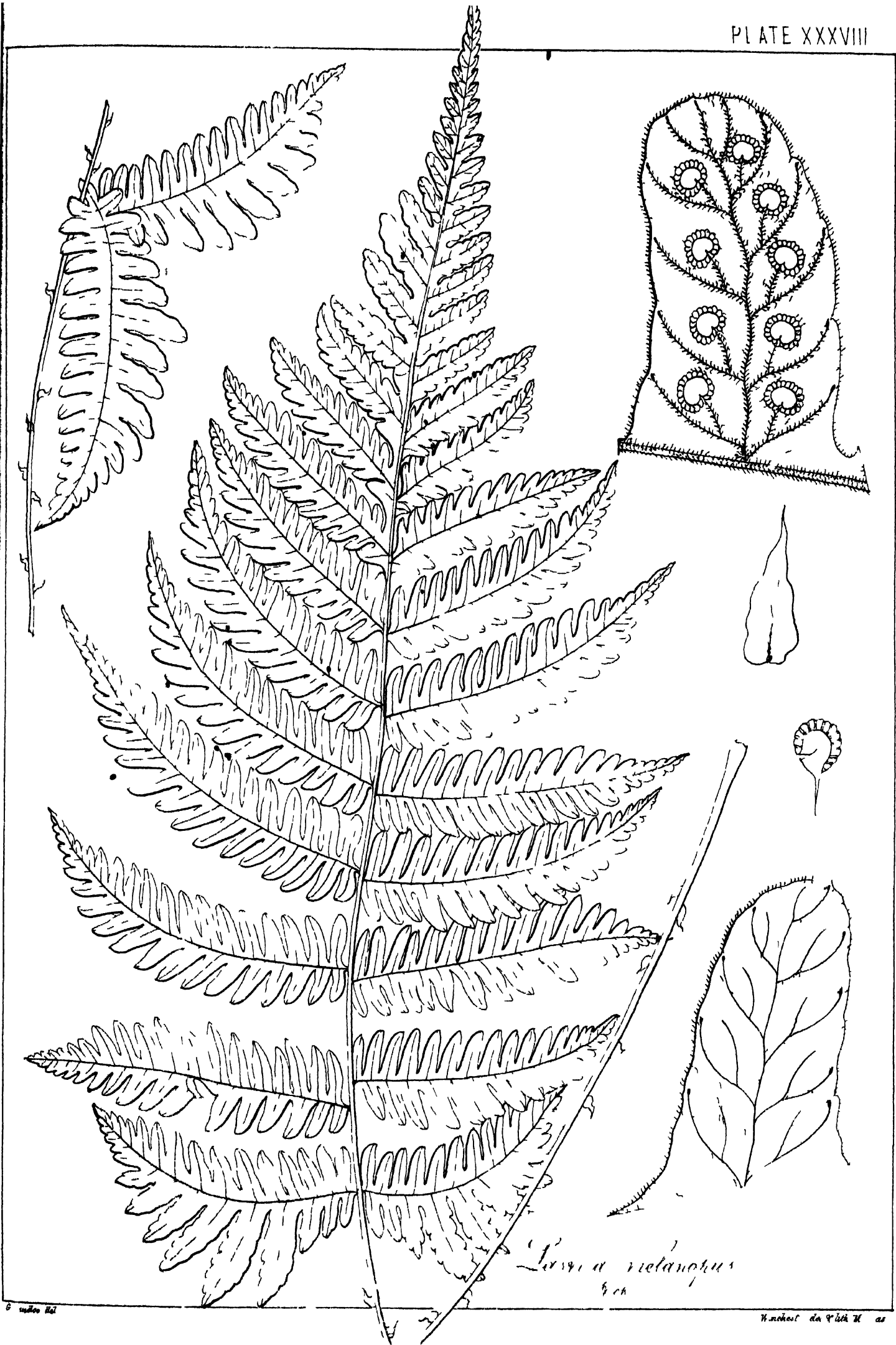
# ASPIDIÆ

**LASTREA MELANOPUS** (Hook.) Caudex ? stipes a little scaly below a span or more long rather slender and as well as the rachis glossy ebeneous black, fronds 12 14 inches long, membranaceous bright green obsolete subglandular pubescent especially on the costæ pinnate, pinnæ sub-opposite sessile 4 6 inches long 1 1½ inch wide oblong shortly acuminate pinnatifid segments oblong obtuse rarely subfalcate entire or nearly so lowest pair of pinnæ semiovate subfalcate the inferior half of the pinnæ with much longer segments 1 1½ inch long lobato pinnatifid venulets forked distant sori small on the superior branch of the veins equi distant, between the margin and the costule involucre small membranaceous reniform ciliated —*Hook Sp Fil* iv 110

The specimen figured is from Moulmein, (Rev Parish)

Hab Moulmein, Amboyna ?

PLATE No XXXVIII



*Lycopodium complanatum*  
L.





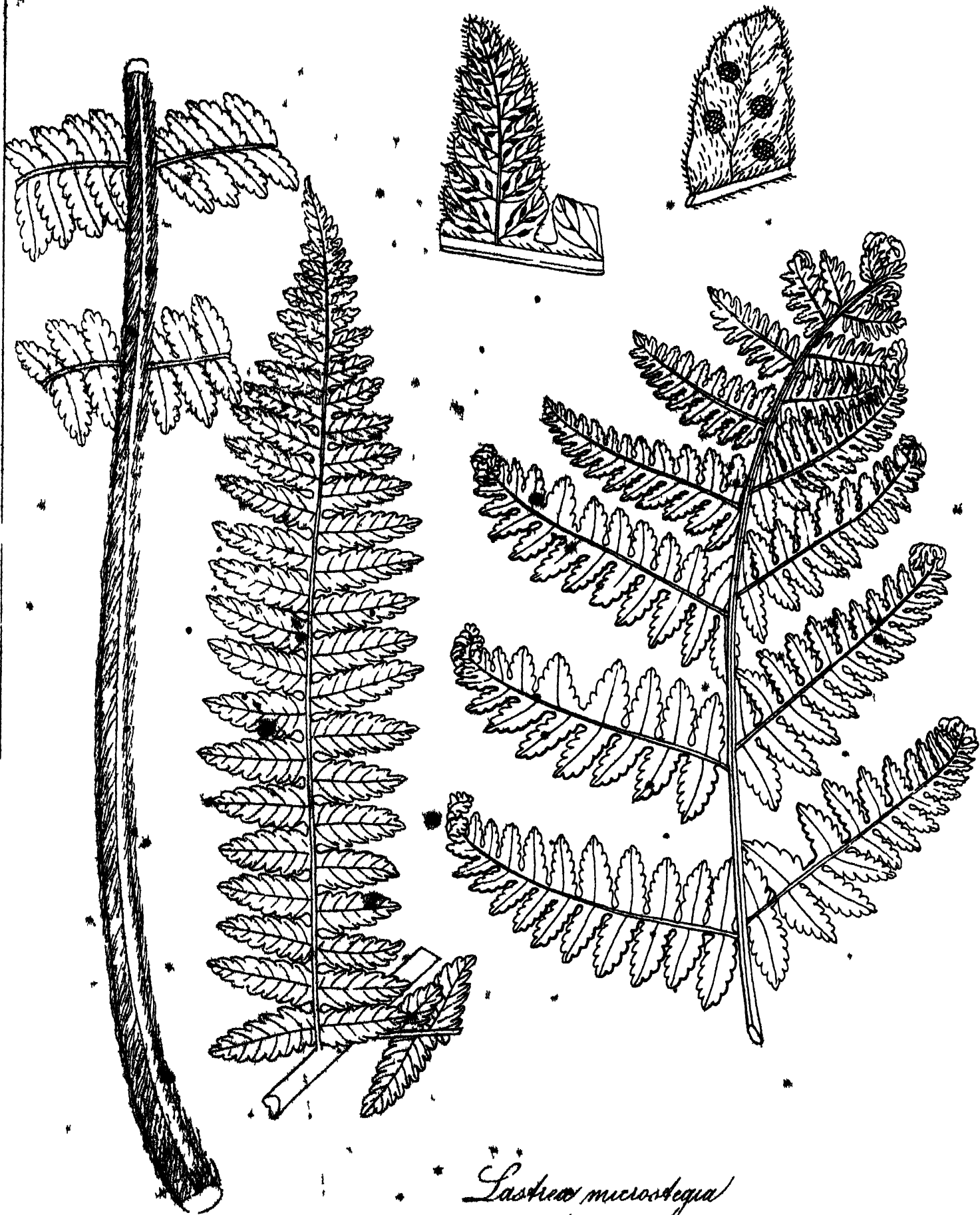
## ASPIDIEÆ.

**LASTREA MICROSTEGIA** (Hook.) Caudex ? stipes a span long stout tawny brown laxly scaly, rachis and costæ stout stramineous frond 2 2½ feet long broad lanceolate membranaceous glabrous acuminate bipinnate pinnæ sessile 4 5 of the lowest pairs shorter 4 inches long sterile and with broader and more approximate pinnæ intermediate ones 6 8 inches long, from a broad base oblong gradually acuminate pinnules ¾ to nearly an inch long from a broad sessile and quite adnate base pyramidally and obtusely acuminate pinnatifid about half way down to the costæ all connected at the very base by a narrow costal wing lobes or segments small ovate blunt entire veinlets distant, sori minute 4 6 on each lobe in two series half way between the costule at the margin involucre very small reniform pale greenish brown —*Hook Sp Fl* iv 119

The figure is taken from Sir W Hooker's 'Species Filicum

Hab Khasya, (temperate region)

PLATE No XXXIX



*Lastrea microstegia*  
(Hook.)







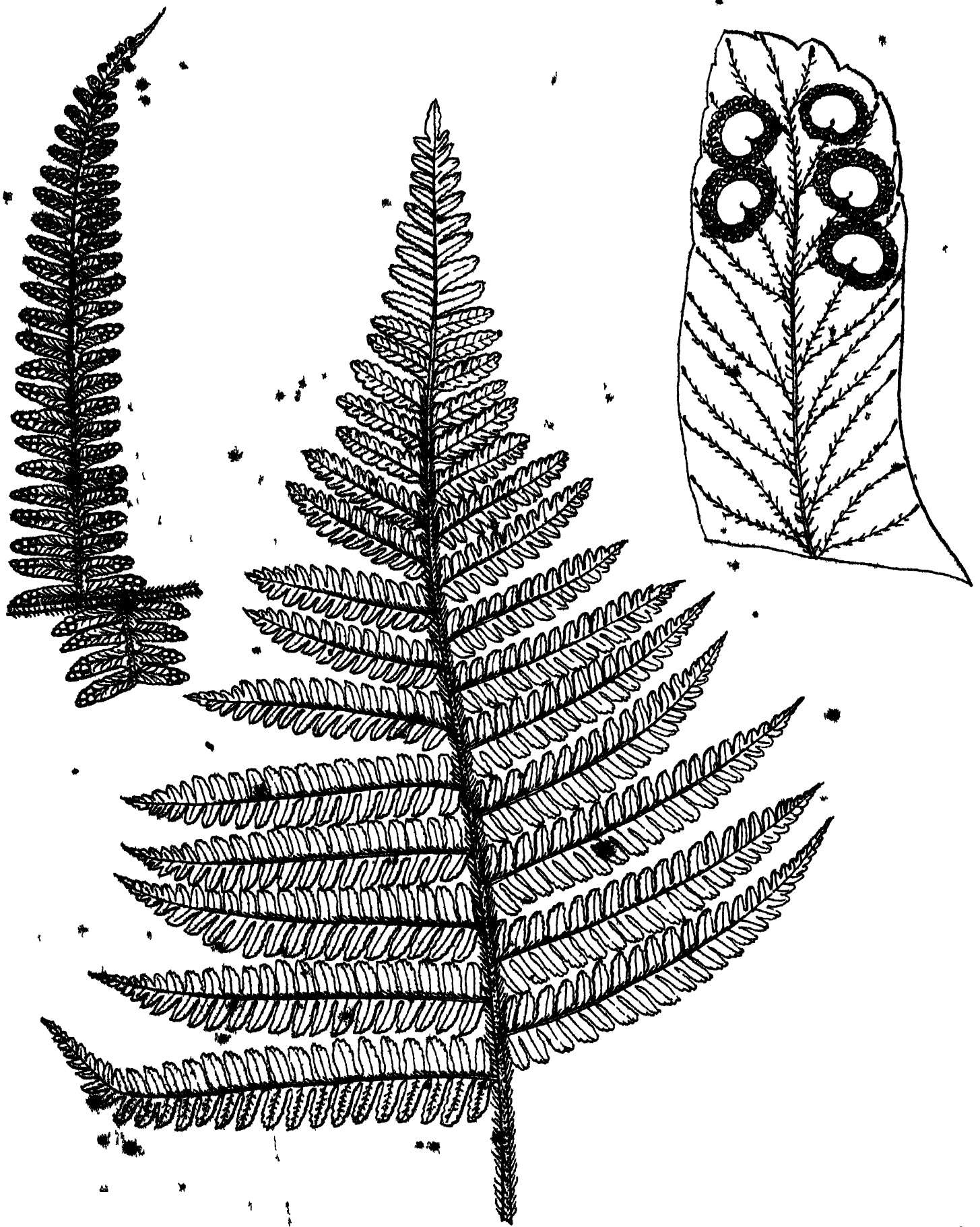
# ASPIDIUM

**LASTREA APICIFLORA** (Hook.) Caudex short stout erect clothed above with subulate scales, stipites stout a span to a foot and more long scaly with appressed lanceolate scales at the base the rest and the stout very straight rachis clothed with numerous close pressed scales varying in shape from small ovate to long lanceolate fronds 2 3 4 feet long oblong or sub oval lanceolate acuminate coriaceous membranaceous pinnate pinnæ numerous alternate horizontal subfalcate 5 6 inches long often an inch broad from a broad sessile base oblong acuminate deeply even to the rachis pinnatifid (almost again pinnate) segments approximate parallelogram oblong straight obtuse or retuse angulate dentate at the apex veinlets numerous simple or forked, sori 5 6 only at the apex of the frond involucre firm membranaceous reniform costæ very paleaceous with appressed subulate scales beneath —*Hook Sp Fl* iv 112 —*Aspidium Wall* Cat n 345 — *Mettlen Aspid* p 54

The specimen figured is from Sikkim, Himalaya, (Dr Thomson)

Hab Nepaul, Sikkim Himalaya (elevation 9 000)

PLATE No VI



*Lactuca apiculata*  
(Noth.)





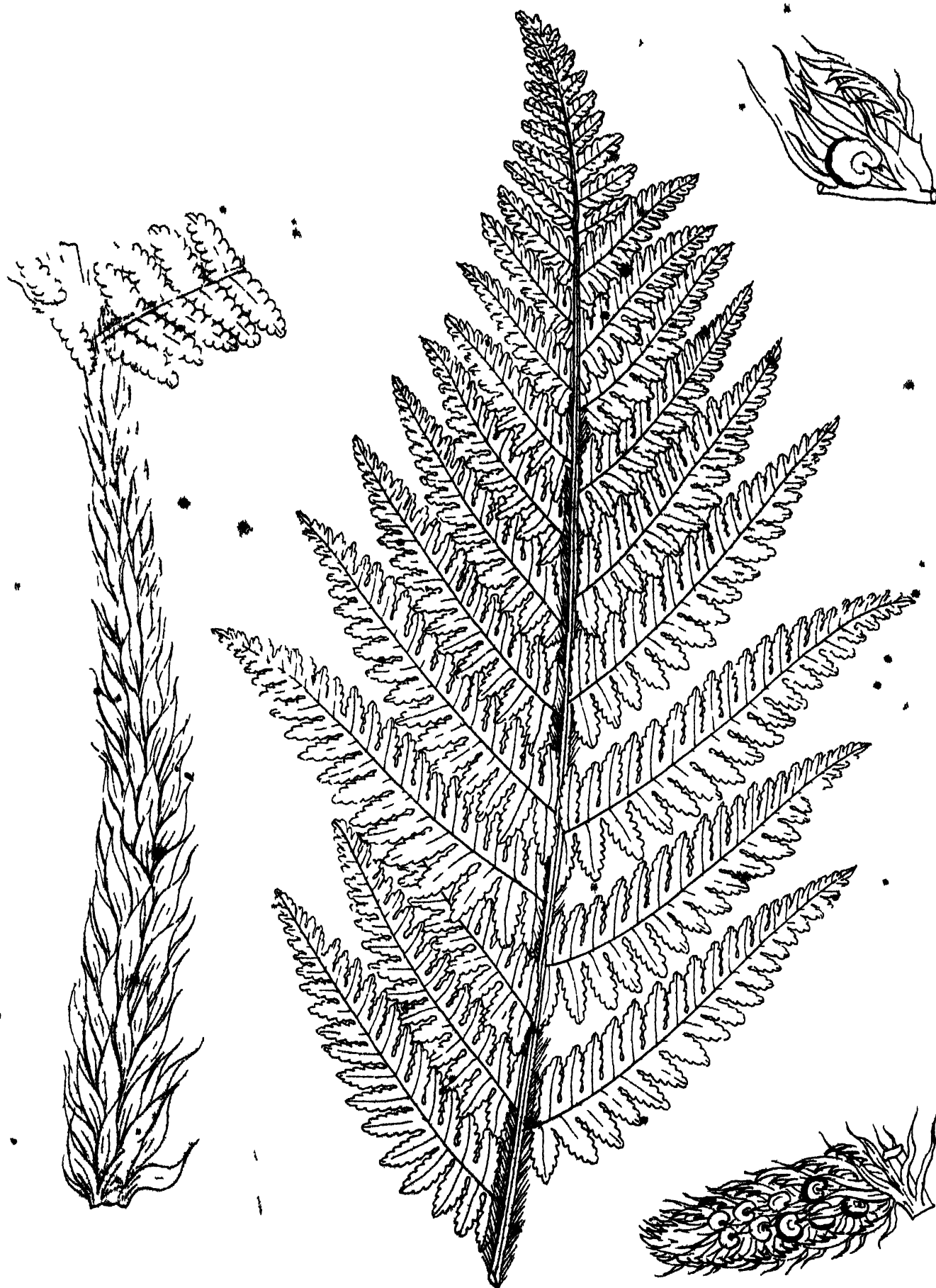
## ASPIDIEÆ

**LASIOFA FALCONERI** (Hook.) Caudex? stipes a foot long very coarse and stout quite squarrose for nearly its whole length with large broad silky ferruginous soft scales mixed with smaller subulate ones these latter only still smaller also clothe the main and secondary rachises fronds  $1\frac{1}{2}$  foot long oblong scarcely acuminate firm rigid coriaceous slightly villous bipinnate pinnae 4-6 inches long an inch wide ere to patent oblong lanceolate pinnules sessile linear oblong  $\frac{1}{2}$   $\frac{3}{4}$  of an inch long about half way down pinnatifid with short round entire lobes the margins reflexed, sori rather large copious one to each lobe, involucre brown very membranaceous cordato reniform very convex so as to be almost hemispherical — *Hook Sp Fil* iv 123

The figure is taken from Sir W. Hooker's Species Filicum

Hab Kashmir

PLATE No XL1



*Lastrea Falconeri*  
(Hook.)







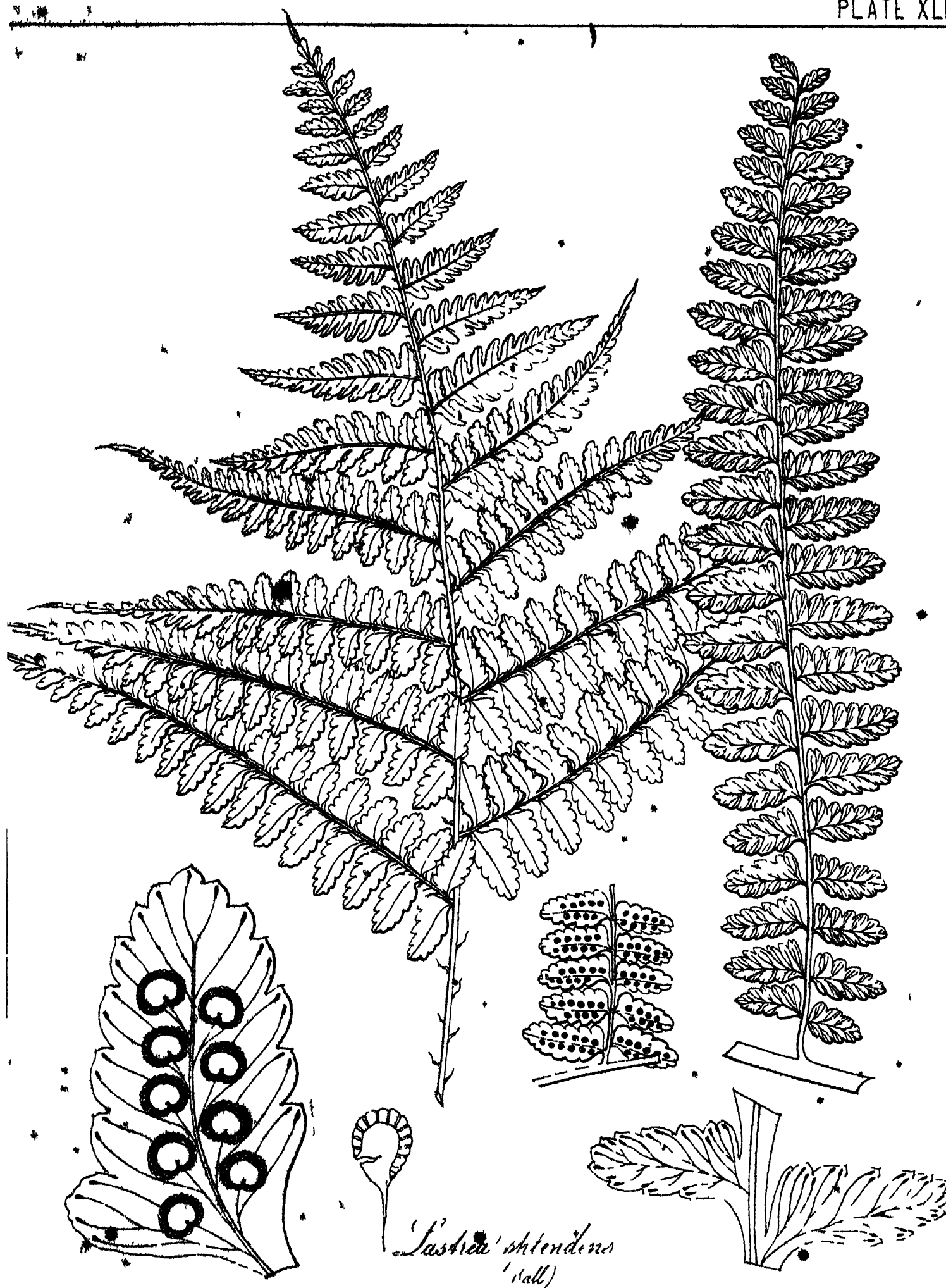
## ASPIDIUM

**LASTREA SPLENDENS** (Hook.) Caudex ?—stipes 1 2 feet (and probably much more) long,  $\frac{1}{2}$   $\frac{3}{4}$  inch broad especially at the base more or less clothed with close pressed deciduous scales dark chestnut brown or often (as well as the principal rachis) ebeneous black and polished, frond ample 2 4 feet long coriaceous broad lanceolate acuminate bipinnate primary pinnæ 6 inches to more than a foot long  $1\frac{1}{2}$  2 inches wide subpetiolate oblong finely acuminate and pinnatifid at the very apex, pinnæ sessile oblong ovate acute or generally broader at the base and subauricled above the rest crenate or lobato pinnatifid the lobes short obtuse entire or dentate, veinlets 2 3 furcate sori 8 14 large conspicuous forming two lines close to the costule involucre rather large orbicular reniform coriaceous dark brown often paler at the margin — *Hook Sp Fil* iv 126 — *Lastrea splendens* Wall in *Hook, Fl Ms Cat of Ind Ferns* n 267 — var  $\beta$  *angustifrons* smaller, stipes black or testaceous brown frond copiously 3 pinnate *Lastrea angustifrons* Moore *Mss*

The specimen figured is from Sikkim, Himalaya (Dr Thomson)

Hab Sikkim Himalaya Bhotan Malaya Peninsula — var  $\beta$  Nepal

PLATE No. VIII



*Lactuca obtendens*  
(Hall)





# ASPIDIÆÆ

**LASTREA PARISHII** (Hook ) Caudex creeping, stipes solitary lax soft slender glabrous and quite scaleless a little downy at the summit fronds 4 6 inches long and as much broad pale green pellucid succulent membranaceous when dry, pubescently hairy on the costæ pentangular deltoid acuminate ternately tripinnate pinnatifid at the apex primary pinnæ oblong acuminate sub opposite deeply nearly to the rachis pinnatifid, inferior ones pinnate at the base and petioled segments and pinnules  $\frac{1}{2}$   $\frac{3}{4}$  of an inch long strongly serrated or acutely pinnatifid and all decurrent so as to form a winged rachis basal pair a primary pinnæ twice or thrice as large as the rest and remote from them half ovate acuminate the lowest basal pinnæ much longer than the rest and more compound, veinlets lax distant twice or thrice forked, squi equidistant between the costule and the margin involucre small rotundato reniform one of the lobes sometimes a little elongated rachis fusco pubescent.—*Hook Sp Fl* iv 131

The specimen figured is from Moulmein (Rev Parish )

Hab Moulmein (shady moist places limestone rocks )

PLATE No XLIII



*Lastrea Parashu*  
(Hook.)







## ASPIDIUM

**LASTREA THELYPTERIS** (Presl) Caudex very long slender branched creeping black copiously rooting stipites distant about a foot long, slender stamaneous black at the base fronds firm membranaceous 1 2 feet long, oblong acuminate glabrous or pubescent on the costæ beneath pinnated pinnae sub opposite patent 2 4 inches long sessile linear-oblong acuminate pinnatifid almost to the apex and down nearly to the rachis segments ovate or oblong acute rarely sub falcate quite entire, veinlets simple the lower once or twice forked sori copious nearer the recurved margin than the costule involucres cordato reniform with glandular hairs at the margin deciduous — *Hort Sp Fil* iv 83 — *Hook Brit Ferns* t 13 — *Aspidium Sw Syn Fil* p 57 — *Willd Sp Pl* v p 249 — *Schk Fil* p 51 t 52 — *Sm Engl Bot* t 400 — *Mettens Aspid* p 112 — *Hook and Arn Brit Fil* ed viii p 583 — *Asa Gray Man of Bot* p 526

The specimen figured is from the Khasya Hills

Hab Khasya Hills Kashmir Man hui t Amu — Marshy ground throughout Europe and North America

PI ATL No XLIV



*Lastrea Thelypteris*  
 (L. L.)





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ASPIDIÆ

CYRTOMIUM (See Ferns of Southern India p 41)

CYRTOMIUM CADUCUM (Wall) Caudex sub erect stout stipites a foot and more long stramineous very paleaceous with black large lanceolate scales below with a brown edge above these are broader membranaceous lax brown ones fronds coriaceous 1 1½ foot long broad lanceolate acuminate pinnated (or sub bipinnate) pinna numerous 3 5 inches long ½ an inch to an inch wide, falcate lanceolate acuminate unequally so at the base superior base truncated and dilated with a more or less distinct obtuse or acute auricle acutely subaristate serrated not unfrequently lobate pinnatifid and in some inferior pinnae quite pinnated with obovate rather obtuse pinnule veins copious approximate erecto patent pinnate free or with the veinlets more or less combined forming elongated areoles generally including a long free veinlet and sometimes the whole frond is bipinnate and the veinlets are then always free and the plant has no very distant resemblance to some forms of *Iolystichum aculeatum* sori large scattered involucre very conspicuous orbicular peltate but sometimes with a small sinus—*Hook Sp Fil* iv 39—*Wall Cat n* 381—*Hook et Grev Ic Fil t* 171—*Mellen Aspid* p 3.—*Cyrtomium Pr Tent Pterid* p 77—*Moore Ind Fil* p 216 (excluding the S American stations)—*Lastica Hookeriana Pr Tent Pterid* p 77

The specimen figured is from the Khasya Hills (Dr Thomson)

Hab Nepal Sikkim Khasya Assam Bhootan

PLATE No XLV



*Cyrtomium caducum*  
(Hall)







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ASPIDIÆ

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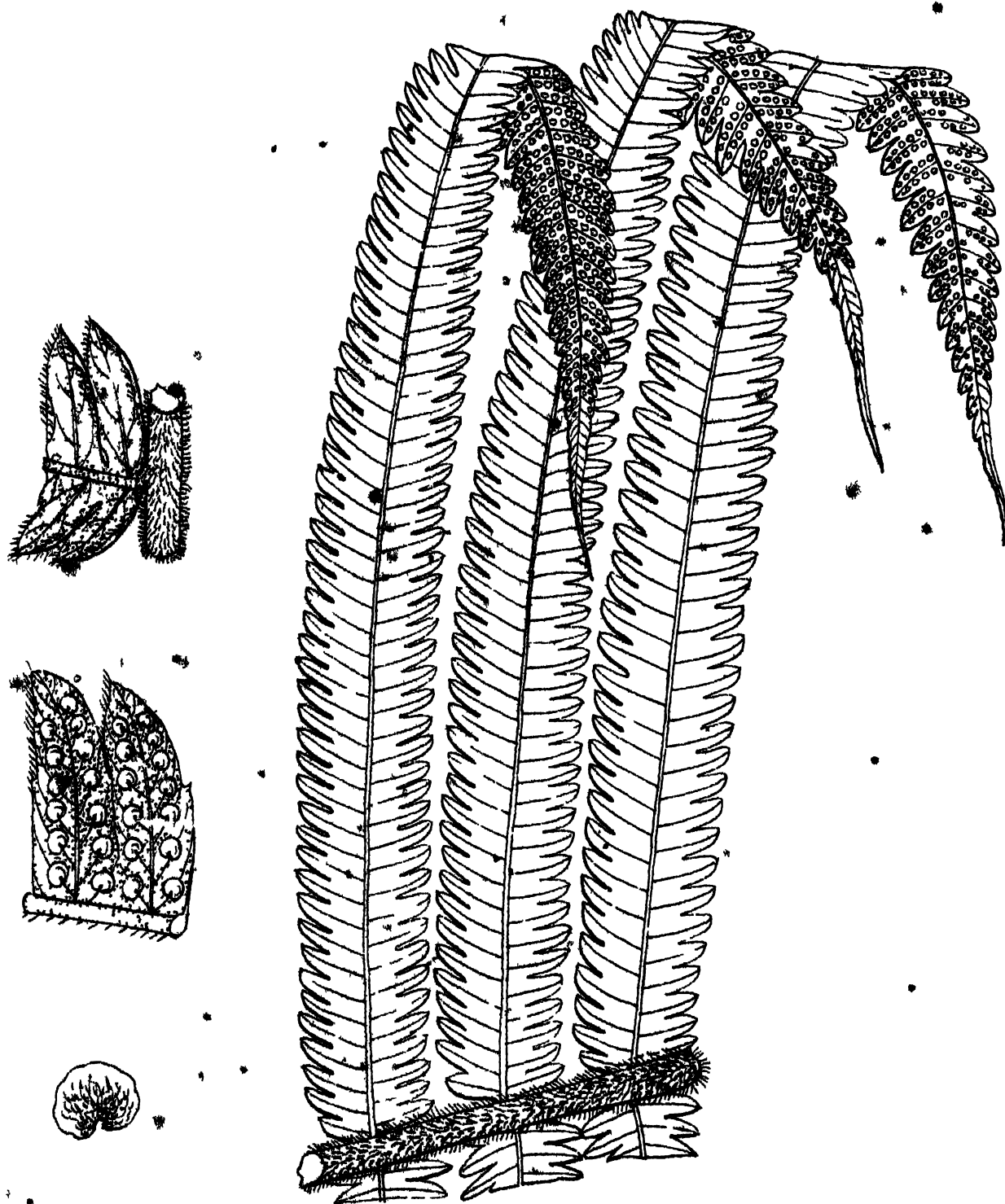
NEPHRODIUM (See ' Ferns of Southern India p 29 )

NEPHRODIUM HIRSUTUM (J Sm ) Stipes and principal portion of the rachis villous with long soft close pressed hairs fronds 3 4 feet long ovato lanceolate acuminate membranaceous  $1\frac{1}{2}$  foot and more wide pinnated slightly hairy on the costa above glabrous and minutely glanduloso resiniferous beneath pinnæ very numerous approximate sessile 10 inches long in the broadest part of the frond and nearly an inch wide, linear oblong finely acuminate truncated at the base uniformly pinnatifid about half way down to the costa, at the base beneath on the rachis is a large conspicuous disciform scale or gland chiefly present on the lower half of the frond segments ovato oblong sub falcate entire rather obtuse one or two of the lowest pairs of veinlets combined sori most copious on the upper half of the frond near the middle of all the veinlets involucre glabrous —*Hook Sp Fil* iv 170 —*J Sm in Hook Journ Bot* iii p 412 (name only) —*Ir Fpimel Bot* p 48 —*Aspid, Metten Aspid* p 107

The figure is taken from Sir W Hooker's "Species Filicum"

Hab Assam, Luzon

PLATE No XLVI



*Nephrodium hirsutum*  
(J Sm)





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**ASPIDIEÆ**

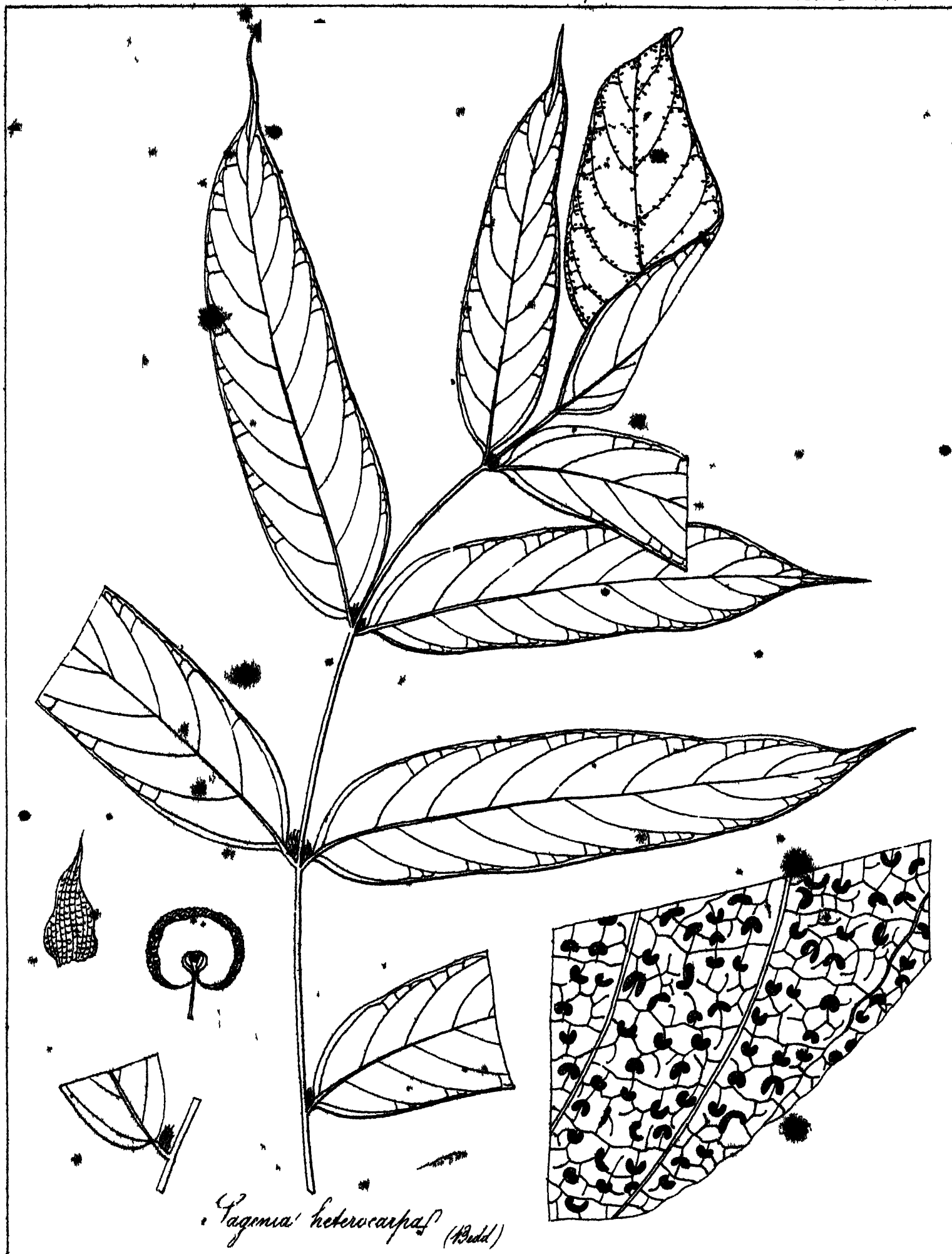
**SAGENIA** (See ' Ferns of Southern India p 27 )

**SAGENIA HETEROCARPA** (Bedd ) Fronds coriaceous membranaceous pinnate pinnæ opposite or sub opposite lanceolate entire very finely acuminate, very shortly petiolate 6 inches long by  $1\frac{1}{2}$  inch wide petioles furnished with a small scaly bud on the upper side at the base of the pinnæ costa prominent primary pinnate veins conspicuous falcate with their areoles divided into 9 12 areoles by the transverse flexuose secondary veins within which are included numerous free simple or forked veinlets, sori copious minute, indusium very various in shape generally hippocrepiform or reniform but sometimes athyroid or asplenoid

The specimen figured is from the Khasya Hills, (Dr Thomson )

My specimens are marked by Mr Moore " *new species near S Menyanthidis* "

PLATE No XLVII



*Fagmisa heterocarpa?* (Budd)







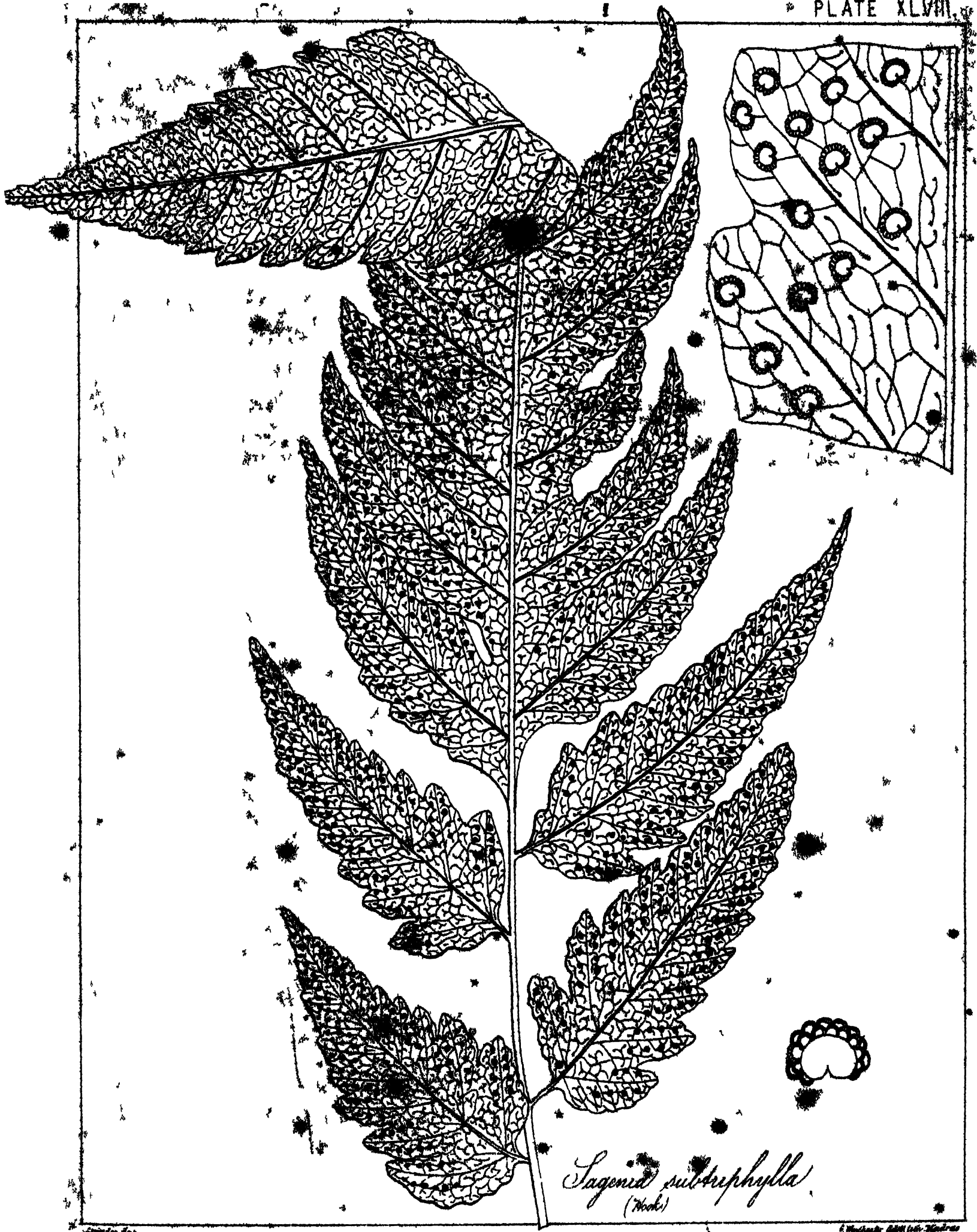
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## ASPIDIÆ

SAGENIA SUBTRIPHYLLA (Hook.) (See Ferns of Southern India p 81 and Plate ccxlii)

The specimen here figured is from Moulmein (Parish) it is 3 feet high and the lowest pair of pinnæ are a foot long, it is considered by Sir William Hooker to belong to the same species as the small form found in Ceylon (Plate ccxlii of "Ferns of Southern India")

PLATE No XLVIII.



*Lagenaria subtriflylla*  
(Hook.)





## LOMARIEÆ

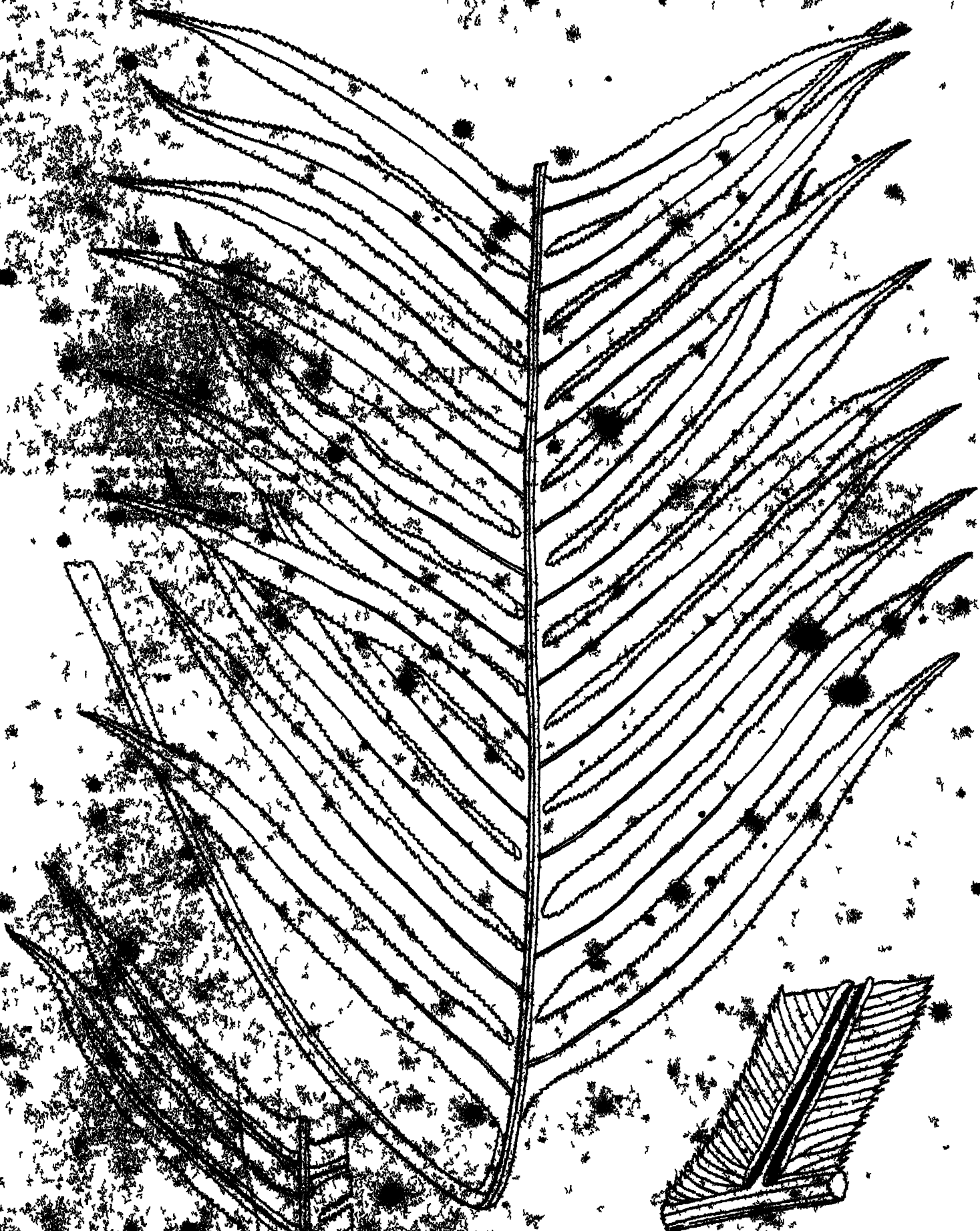
BLECHNUM (See ' Ferns of Southern India p 10)

**BLECHNUM NITIDUM** (Pr) Caudex ——— ? fronds ample  $1\frac{1}{2}$  3 feet oblong ovate in circumscription truncate at the base firm coriaceous pinnatifid almost to the rachis segments very numerous approximate linear lanceolate acuminate more or less falcate sharply serrated lower ones almost equal in length to those above them and free (so that the fronds are pinnated below,) veins very close simple patent soon close to the costa continuous from the base to near the apex, stipes elongated nearly free from scales, rachis 2 furrowed beneath — *Hook Sp Fl* III. 44

The figure is taken from Sir W Hooker's Species Filicum

Hab Mishmee, Assam, Luzon Isle of Sorzogon South Brazil Guam Marianne Islands

PLATE No XLIX



*Platanus nitidum*  
(L.)







## LOMARIEÆ

## BLECHNIDUM (Moore Index Filicum p. clv, (Blechnum Sp. Hooker))

Gen. char. *Sori* indusiate linear continuous on a transverse receptacle approximate to the costa. *Indusium* linear opening along the inward side. *Veins* springing from a central costa immersed. *venules* reticulated forming a series of large angular areoles next the costa, other narrower ones often extended nearly to the margin. ultimate *veinlets* free and thickened at the apex.

Fronds pinnatifid sub coriaceous. This genus only differs from Blechnum in its reticulated venation. (Moore)

**BLECHNIDIUM MELANOPUS** (Hook.) Caudex — ? frond spithameous (and more?) broadly falcato-lanceolate glossy sub coriaceous pinnate pinnae very approximate from a rather broad adnate base linear oblong falcate somewhat acute the margin entire narrowly revolute uppermost ones gradually confluent into a lanceolate elongated lobe the lowest 3-4 pairs suddenly diminished short very obtuse sub auriculate at the superior base veins internal reticulated forming large angled areoles next the costa, narrower oblique ones often extending to the margin ultimate veinlets free and clavate at their apex just within the margin sori quite close to the costa continuous not reaching to the apex of the pinnae stipes (about a span long) and lower half of the rachis beneath black — *Hook. Sp. Fil.* 1764

The figure is taken from Sir W. Hooker's Species Filicum

Hab. Khasya Hills

PLATE II







## PLATYLOMÆ

PLAGIOGYRIA (Kunze Schl. 1 Supp. 11 61)

(Lomaria sp. acut. Acrostichum sp. ellipt. —Stenochloa sp. acut.)

Gen. char. Sori spuriously indusiate marginal short oblong, the receptacles of the same form terminal on the veins contiguous. The thickly ringed spore cases becoming laterally confluent into a linear mass on each side of the costa of the contracted pinnæ. Indusium (spurious) formed of the inflexed attenuated margin. Pinnæ simple or forked from a central costa, venules parallel free their apices longitudinally serriferous in the fertile fronds. (Moore)

Fronds pinnate the fertile contracted stipules furnished at the base with spongy glands and base of the pinnæ beneath sometimes furnished with a gland. The oblique line to the spore cases is anomalous among the Polypodiaceæ and in this peculiarity the genus approaches the Cyathoclema.

This genus is placed by most authors in the tribe Lomariaceæ with which it has much natural affinity and Sir W. Hooker makes it only a section of that genus. Mr. Moore however follows Kunze and Mettenius in separating it and points out that it can have no real structural affinity with Lomaria as the sori are arranged in short lateral contiguous lines along the ends of the veins and parallel with them as in Platyloma whereas in Lomariaceæ the receptacle of the sori is linear continuous and transverse to the venation.

PLAGIOGYRIA ADNATA (Blume) Caudex stout short stipules caespitose elongated brown triquetrous a span to 1½ foot long slender naked at the base dilated and subcarinate furnished with orbicular spongy glands fronds a foot and more long ovate lanceolate chartaceous membranaceous sterile ones pinnatifid almost to the rachis below pinnated but all the pinnæ united by a narrow wing segments mostly opposite distant lanceolate much acuminate more or less falcate the inferior base round superior base extended upwards the margins entire or obscurely toothed the apex strongly serrated fertile frond pinnated pinnæ alternate distant linear sessile rather obtuse sori covering the whole under side between the costa and the brown membranaceous very distinct involucre —Hook. & Grev. Bot. Beech. 19 —Bl. & Kunze Bot. Java p. 205 —Lomaria (Lindb.) Hook. & Grev. —Plagio-gyria scandens Metten. in Plagiog. p. 9.

The specimen figured is from the Khasya mountains (Dr. Thomson)

Hab. Java Khasya Hills (elevation 1,000 to 1,000 feet)

PLATE No. 11









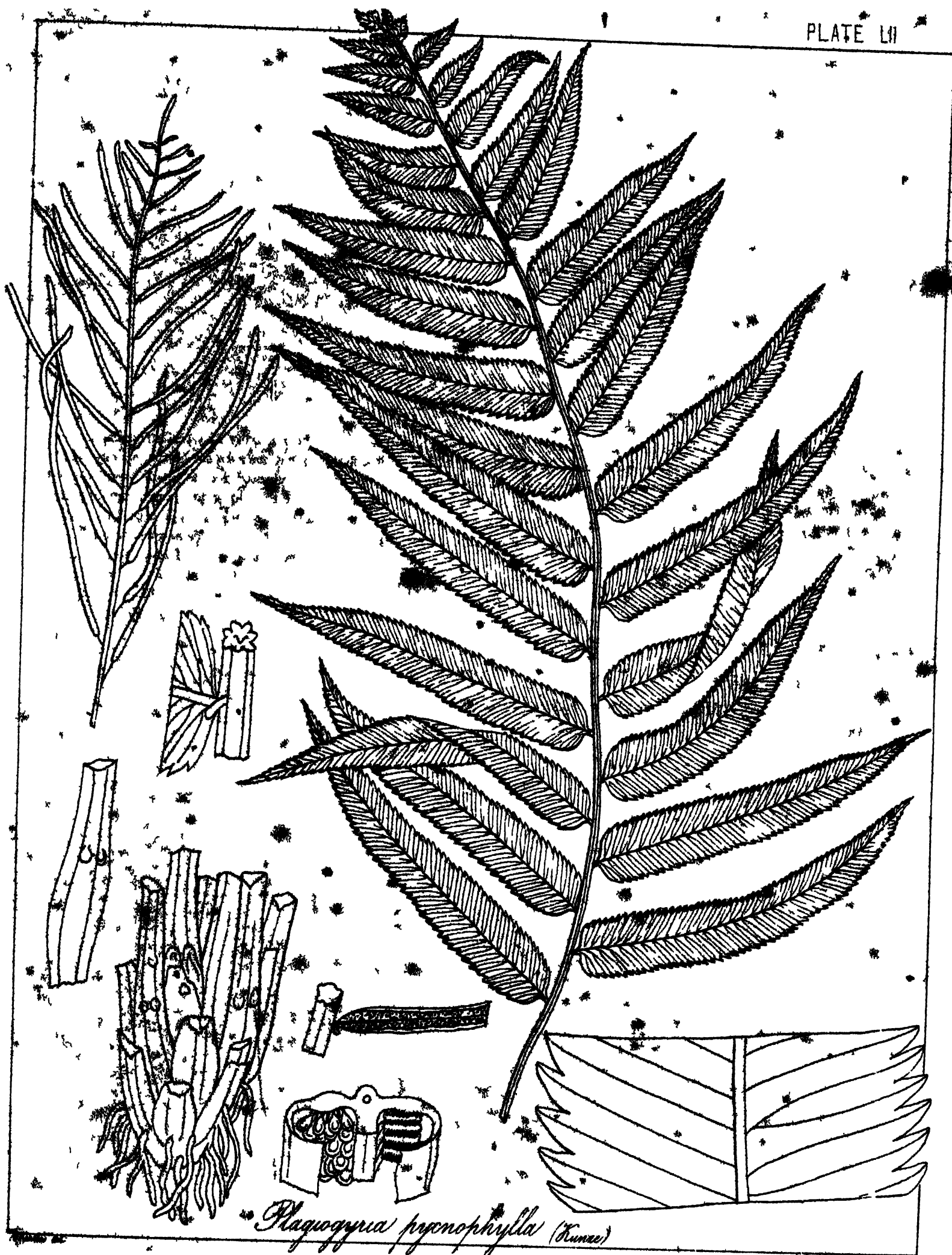
## PLATYLOMEÆ

**PLAGIOGYRIA PYCNOPHYLLA** (Kunze) Caudex stout erect very woody and having many wiry roots fronds fascicled stipites sub-quadrangular 2 furrowed in front (as is the rachis) at the base dilated fleshy triquetrous subulate bearing spongy glands fronds 1 2 and more feet long *sterile* ones sub chartaceous opaque brown when dry oblong ovate pinnated for its whole length except that the small terminal ones are confluent into a lobed (or pinnatifid) and finely acuminate and serrated apex pinnæ horizontally patent sessile or very nearly so numerous approximate narrow oblong lanceolate very finely almost caudately acuminate, the base very obtuse and truncate (neither dilated nor contracted) at the base beneath furnished with one or two prominent glands (sometimes wanting) the margin very minutely serrulate the caudate apex strongly serrated veins numerous closely placed simple and forked *fertile* fronds narrower pinnated pinnæ linear obtuse on very short petioles with a gland on the under side involucre at first vaulted conspicuous membranaceous brown at length forced back by the capsules — *Hook Sp Fil* iii 21 — *Kze in Bot Zeit* iv p 143 — *Acrostichum triquetrum* Wall Cat n 23 *in part* — *Stenochlæna* ? *pycnophylla* P. *Flum Bot* p 165 — *Lomaria scandens*, *De Vries in Herl Az* — *L. callosa* *Fée Gen Fil* p 70 — *Plagiogyria adenoïdes* — *T Moore Ms*

The specimen figured is from the Khasya Hills (Dr Thomson)

Hab Nepaul, Assam, Khasya Bhotan, Sikkim (7—10 000 feet) Java

PLATE No LII







## PLEUROGRAMMEÆ

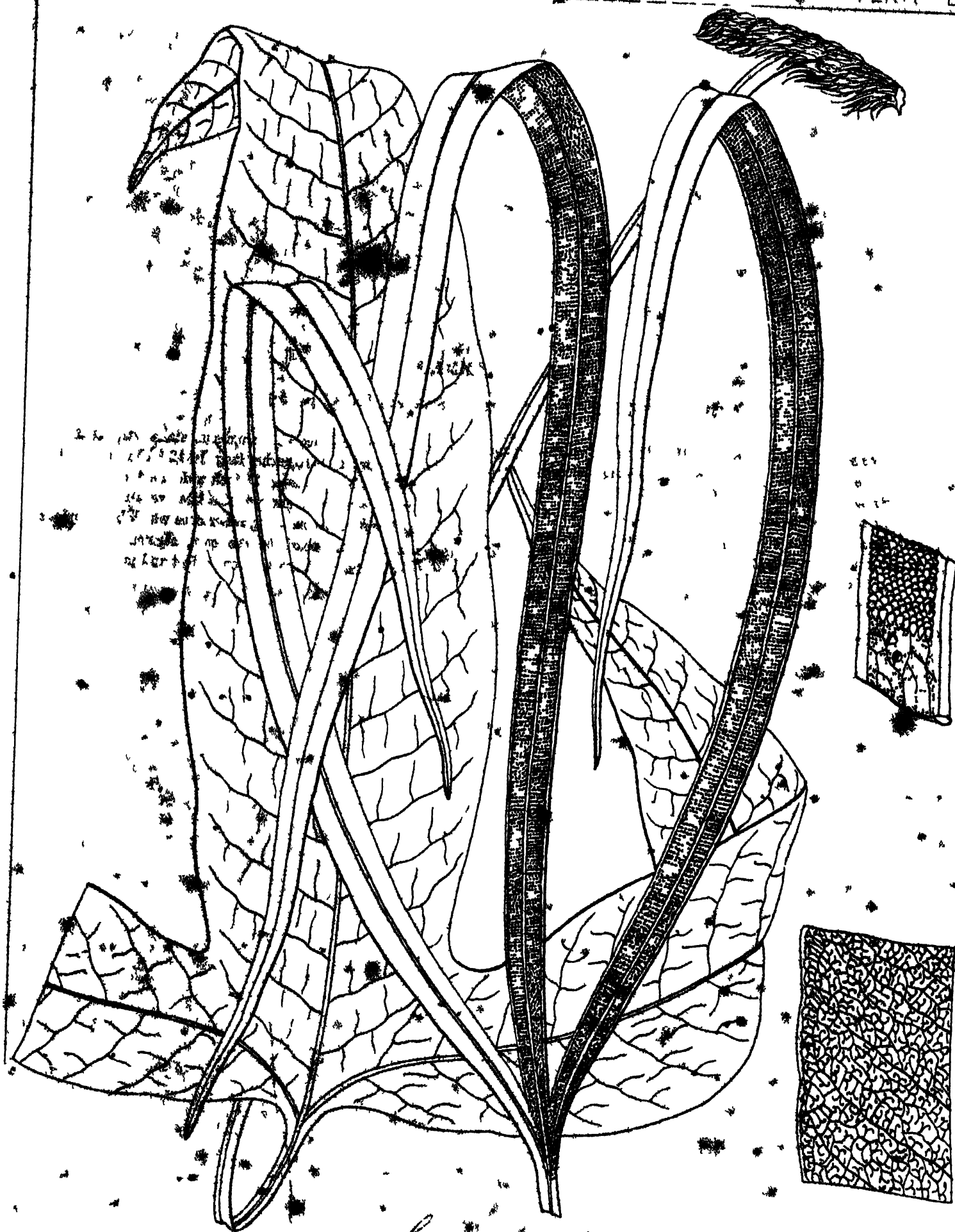
## GYMNOPTERIS (See Ferns of Southern India p 15)

**GYMNOPTERIS TRICUSPIS** (Hook) Caudex creeping clothed with subulate setaceous ferruginous scales, stipites 1 foot long  $1\frac{1}{2}$  of the fertile frond *sterile* frond sub coriaceous membranaceous sub triangular cordate 8 10 inches long 10 12 inches wide at the base including the spread of the lateral lobes deeply trilobate lateral lobes 5 inches or more long,  $1\frac{1}{2}$  inch wide horizontally patent, intermediate one 6 inches and more long, 2 inches wide, all of them oblongo lanceolate acuminate entire uncostate, venation manifest, costules distant indistinct connected by transverse irregular curved veins forming large areoles enclosing lesser ones which have copious free branched and divaricating veinlets *fertile* fronds much elongated but contracted tripartite nearly to the base, segments scarcely  $\frac{1}{2}$  an inch wide linear strap shaped acuminate lateral ones 9 10 inches long erecto sub patent, intermediate one a foot and more long, sori universal except on the costa —*Hook Sp Fil* v 272 —*Anapausia Moore*

The figure is taken from Sir W Hooker's "Species Filicum"

Hab Sikkim—Himalaya, (hot valleys)

PLATE No LIII



*Gymnocarpus arbusculus* (Hooker)







6

TÆNITIDEÆ

*Veins uniform reticulated without free included veinlets*

TÆNITIS (Willdenow Swartz Synops Fil 3 24)

(*Pteropsidis* sp. *Desvaux* — *Digramma* *Kuhn* — *Pteridis* sp. *Auct* — *Antrophu* *Sp Auct*)

Gen char *Sori* non indusiate linear continuous or interrupted the *receptacles* sub marginal or medial superficial or somewhat immersed *Veins* uniform reticulated forming elongated longitudinal or oblique areoles without included free *veinlets*

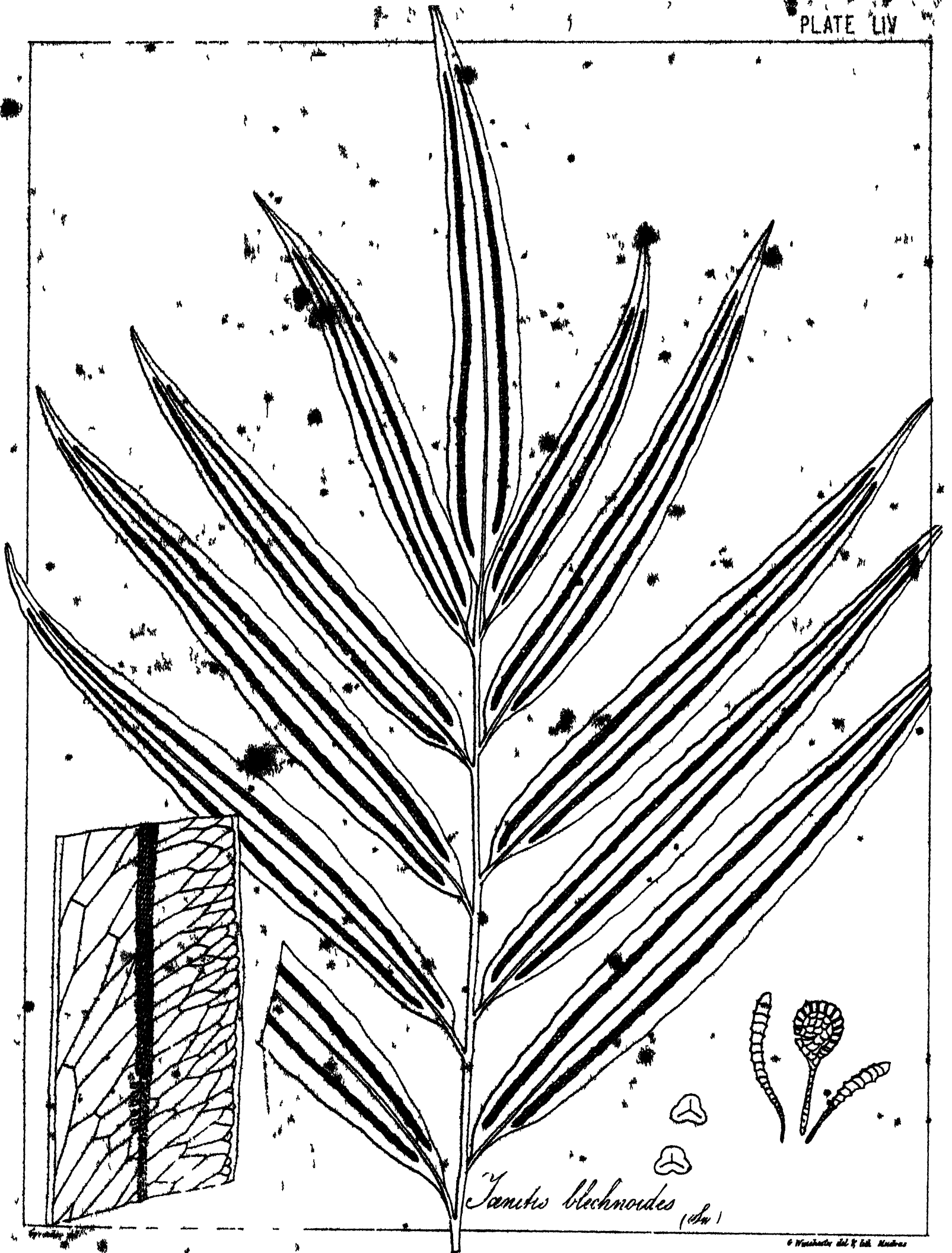
Fronds simple lobate or pinnate rigid Rhizome creeping (Moore)

**TÆNITIS BLECHNOIDES** (Sw) Caudex creeping nearly as thick as a writing pen setose stipites approximate 8 12 inches long thickened and setose at the base fronds 10 inches to 1 foot and more long (rarely when young yet soriferous simple) coriaceous sub membranaceous generally dimorphous pinnated pinnæ a span or more long entire at the margin *sterile* fronds with 3 7 broad lanceolate suddenly acuminate pinnæ *fertile* pinnæ more numerous 10 16 linear lanceolate gradually attenuated at the base lower ones sessile *sori* continuous or interrupted veins copiously anastomosing areoles oblique oblong veinless — *Hook Sp Fil* v 187 — *Sw Syn Fil* pp 24 and 220 — *Willd Sp Pl* v p 13 — *Bl Ind Jav* p 70 t 28 f 2 and t 29 — *Pécl littér* p 26 — *Tænitis pteroides* *Schk Fil* p 21 t 6 — *Spreng Analect* iii p 374 t 10 f 106 — *Pteris blechnoides* *Willd Phytogr* p 13 t 9 f 3 — *Var interrupta* much smaller, *sori* often interrupted *Var interrupta* *Wall Cat n* 112 — *Hook and Grev Ic Fil* #62

The specimen figured is from Burmah (Rev Parish)

Hab Malay Peninsula and Archipelago Penang Luzon Borneo Malacca and Java Singapore

PLATE No LIV



*Jania blechnoides* (Sn)





## TÆNITIDEÆ

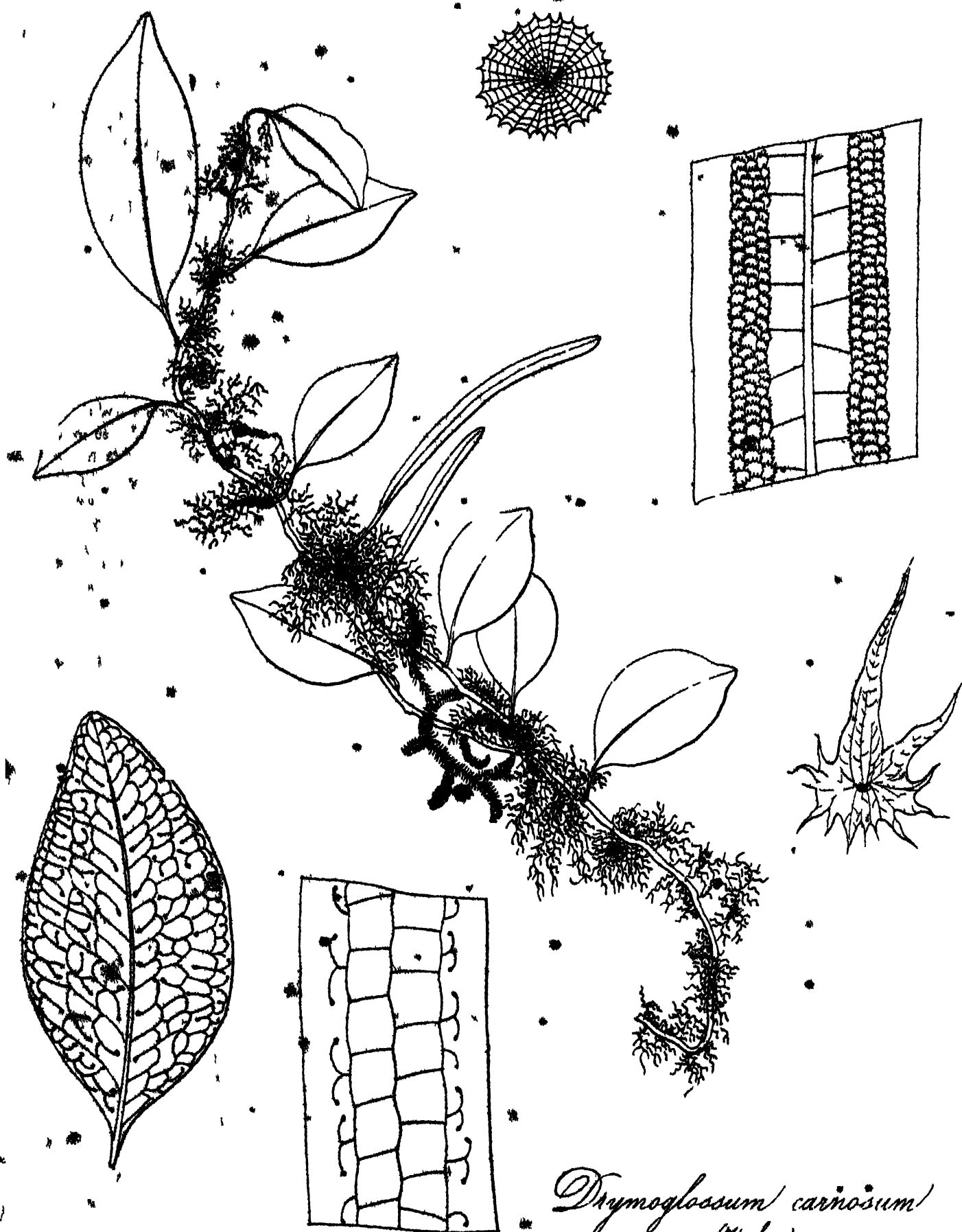
## DRYMOGLOSSUM (See Ferns of Southern India p 18)

**DRYMOGLOSSUM CARNOSUM** (Hook) Caudex long filiform wiry clothed with peltate toothed scales, stipites 2 lines to 1 inch long (in the *fertile* frond) distant slender fronds simple of two kinds *sterile* one from  $\frac{1}{2}$  an inch (and then generally orbicular or subcordate) to 2 and even 3 inches long and then elliptical or obovate or spathulate or even lanceolate and acuminate thick and fleshy coriaceous when dry faintly costate on the under side veins anastomosing the areoles including free generally simple veinlets *fertile* fronds 1 2  $2\frac{1}{2}$  inches long linear spathulate obtuse sori linear continuous forming a line intermediate between the costa and the margin soon confluent and representing one broad band nearly as broad as the frond when young covered by numerous peltate pedicellated scales —Var *major* fronds 1 2 inches long sterile ones elliptical or obovate spathulate rarely lanceolate —*Hook Sp Fil* v 189 —*Hook Gen Fil* t 78 A —*Fee Vittar* p 29 —*Nothochloa* ? (*Tænitis* ?) *carnosa* *Wall Cat n* 131 —*Lemmaphyllum*, *Pr Epim Bot* p 108 —*Tænitis Metten*

The specimen figured is from Sikkim (Dr Thomson)

Hab Nepal Sikkim Loochoo Island, and Keekat Island Japan, a smaller form (var *minor* *Hook*) is formed in Japan, North China, Fort Hamilton, and Formosa

PLATE No LV









## VITTARIEÆ

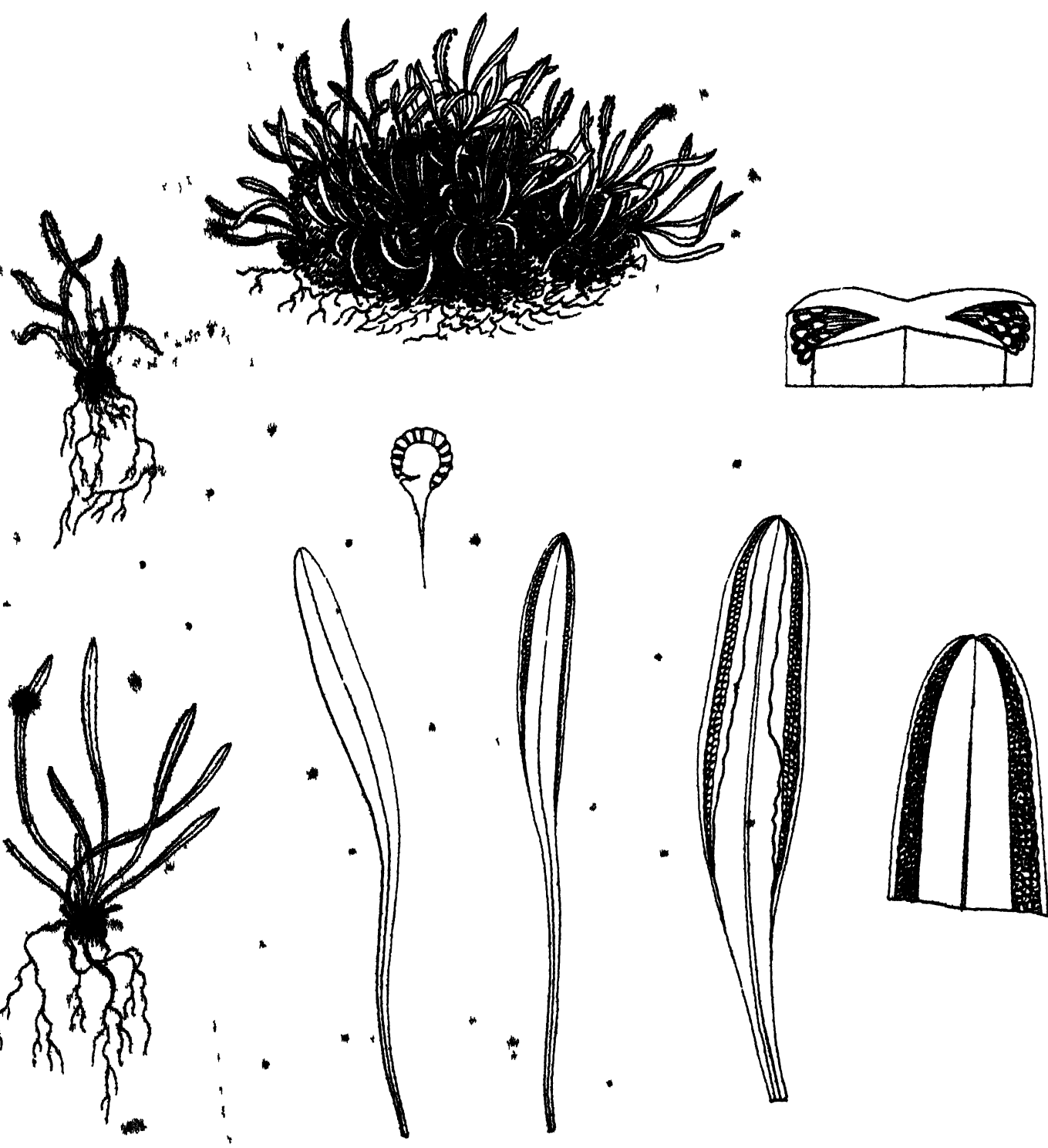
VITTARIA (See ' Ferns of Southern India p 6 )

\* **VITTARIA MINOR** (Fée) ' Fronds linear costate obtuse tapering at the base into a short stipes, sori apicular broad exactly marginal in a deep sulcus, sporangiasters none —Var  $\beta$  *minima* Hook fronds 1 inch long less than  $\frac{1}{2}$  a line wide.—*Hook Sp Fil* v 183

\* The specimen figured is from Moulmein (Parish )

Hab Moulmein, another variety of the same species is found in Borneo and in the Philippine Islands

PLATE No LVI



*Vittaria minor*  
var. *minima* (Hook.)





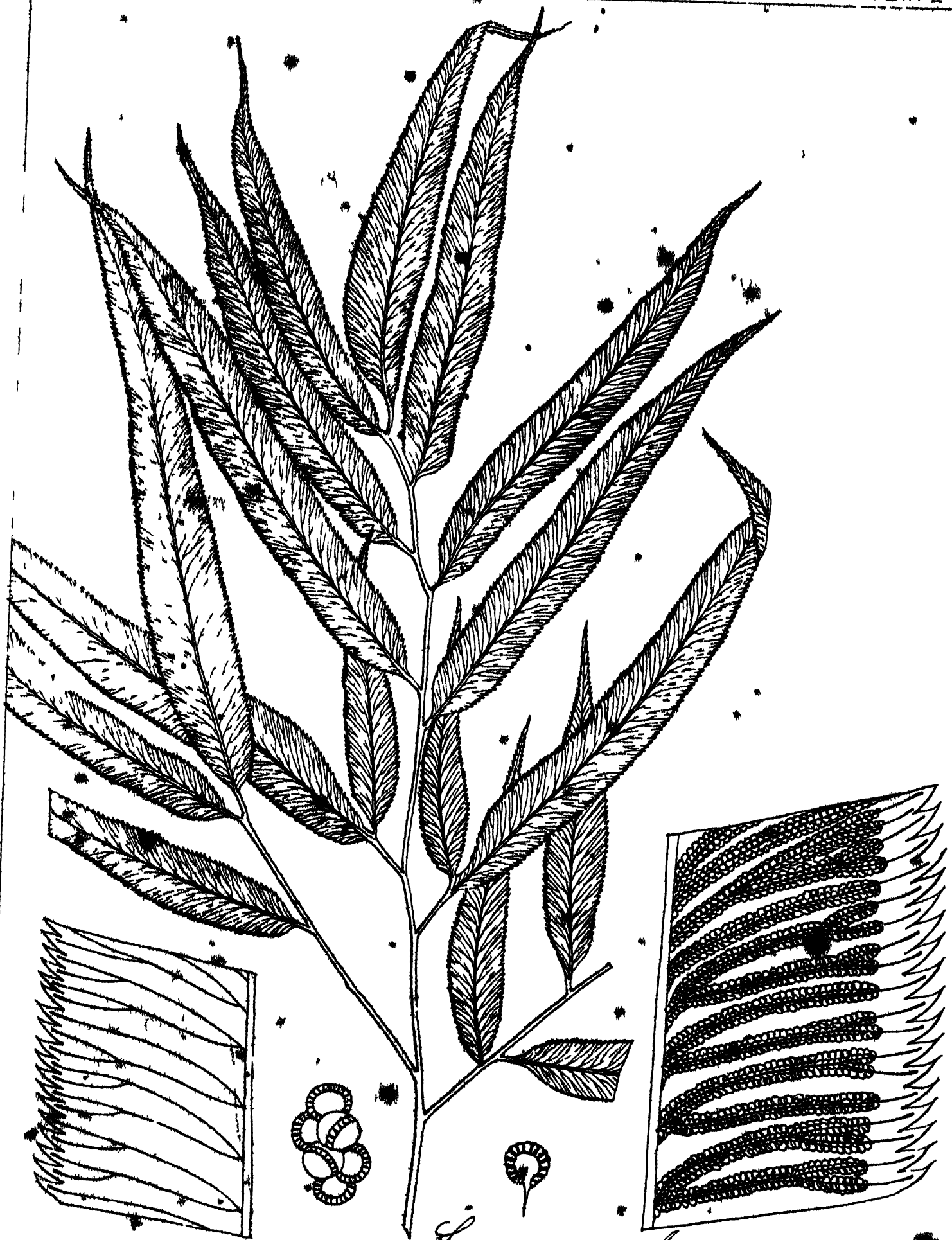
GYMNOGRAMMEÆ

GYMNOGRAMMA (See Ferns of Southern India' p 77)

GYMNOGRAMMA JAVANICA (Bl) (See Ferns of Southern India p 77)

The specimen here figured is from Dalhousie (Col Dyas ) it is very different in appearance to the Ceylon fern figured in Plate CXXIII of this work being much more compound and with smaller pinnae it is the *G Javanica* of Blume the Ceylon plant being the *G sinuata* of that author Sir W Hooker however considers the two only varieties of one species

PLATE No 1 VII



*Gymnogramma javanica* (Bl.)







## ASPLENIEÆ

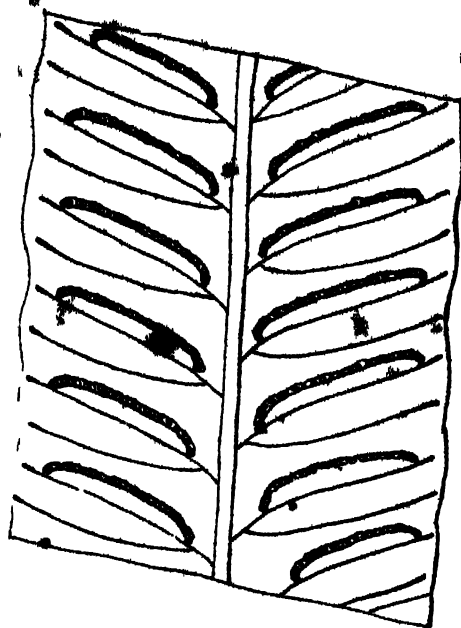
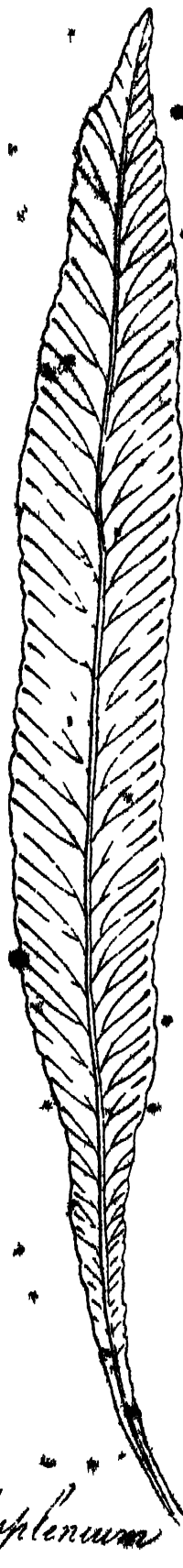
ASPLENIUM (See Ferns of Southern India p 42)

\* **ASPLENIUM GRIFFITHIANUM** (Hook.) Caudex short thick sub repent fronds caespitose a span to nearly a foot high an inch in diameter sub coriaceous pale green with scattered small scales lanceolate shortly acuminate tapering gradually below into short winged stipes the margin rather deeply and coarsely crenato serrate the narrow acumen excepted veins rather distant sub horizontally patent sori distant short and rather broad two thirds the length of the vein involucre pale coloured firm membranaceous —*Hook Sp Fil* iii 87 —*Hook Ic Plant* t 928 (or *Cent of Ferns* t 28) —*Mettlen Asplen* p 89

The specimen figured is from Sikkim below Darjeeling (Dr Thomson)

Hab Assam, Sikkim, Mishmee

PLATE No LVIII



*Splenium*

*Griethianum*

'root'





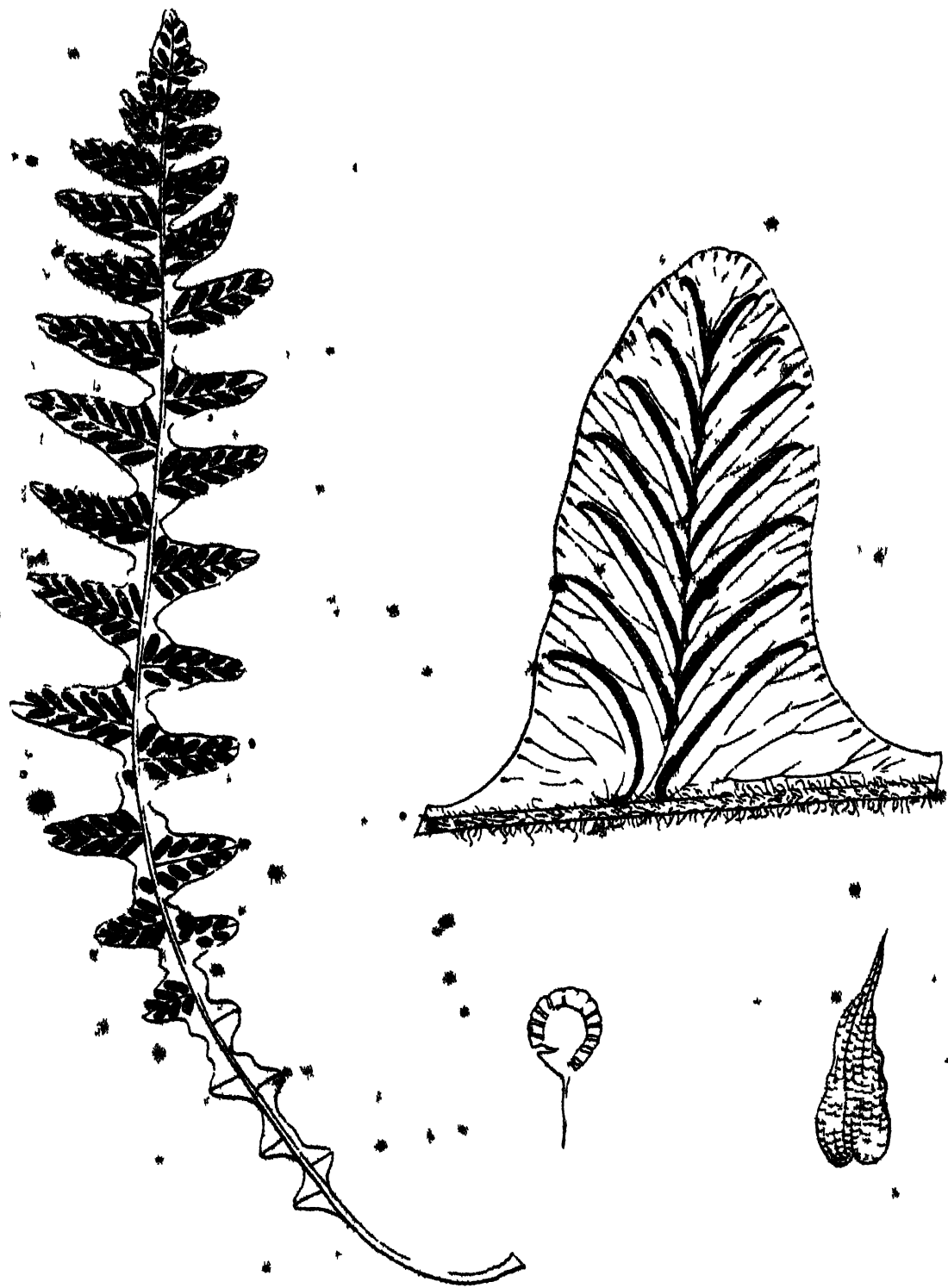
## ASPLENIEÆ

**ASPLENIUM ALTERNANS** (Wall) Caudex short descending copiously rooting squamose with subulate scales as is the very short (rarely an inch long) stipes and base of the costa beneath fronds cæspitose about a span long chartaceous very opaque pale rusty green beneath glabrous lanceolate scarcely acuminate attenuated below deeply and regularly pinnatifid throughout, lobes ovate or triangular oblong with wide sinuses obtuse quite entire veins sub flabellate dichotomous all free sori copious on all the lobes in two rows linear oblong erecto patent the superior basal one parallel with the costa —*Hook Sp. Fil.* 111 92 —*Wall Cat. n.* 221 —*A. Dalhousie* *Hook Ic. Pl.* t 105 —*Mett. Asplen.* p 147

The specimen figured is from Dalhousie, (Col. Dyas)

Hab. North West Himalaya 6 000 feet Kumaon Simla Chumbra hill—Abyssinia

PLATE No. LIX



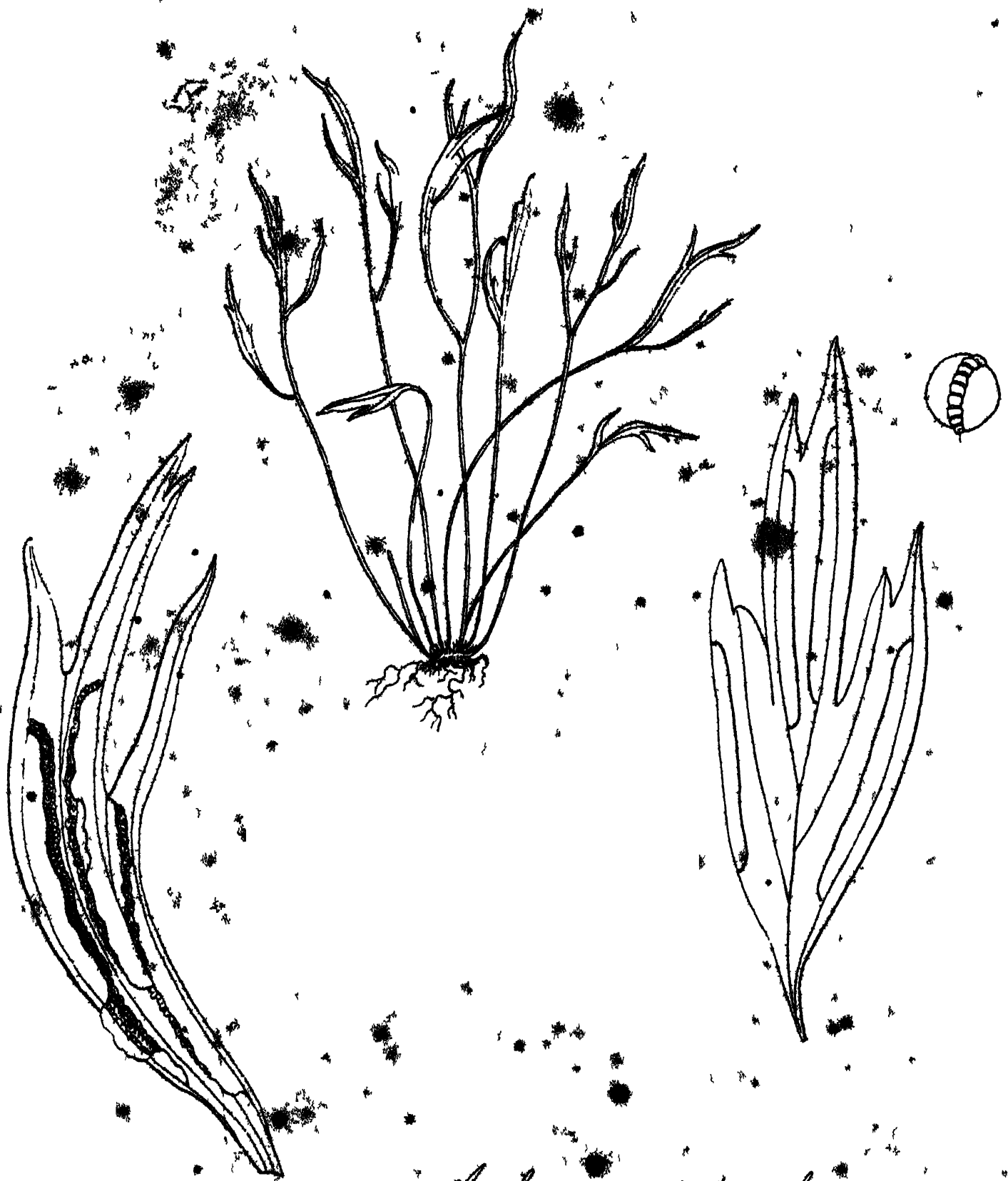
*Asplenium alternans*  
(Wall)

•  
ASILENIFÆ

**ASPLENIUM SILENTRIONALE** (Sw.) Small caudex creeping densely radiculose scarcely pinnaceous stipites numerous tufted 3-6 inches high erect flexuose green brown at the base frond 1-2 inches long coriaceous glabrous pinnated pinnae  $\frac{3}{4}$  1 inch long long pinnated linear or linear lanceolate subangulate often very acute or acuminate rarely bitely generally 2-3 alternate entire or finely cleft lateral venient small lobulate rarely bi-nerved (2-3 acuminate segments) veins forked parallel very long involucre also much elongated attached in the margin—*Hbk. Sp. F.* t. 111—*Sw. in Schreb. Journ.* p. 253—*Willd. Sp. Pl.* v. 2 p. 301—*Schreb. Fl.* p. 121 (6)—*Jenl. Bot.* t. 1017—*Mitten. Asplen. Ind. Hist. Lys.* p. 111 f. 21—*More. Ferns Brit. Print.* t. 11 c. 11—*Mitt. & Asplen.* p. 141—*Asplen. Ind. F. C. Gen. Ind.* p. 11 f. 6 f. 1—*American Van.*—*Asplen. Ind. Sp. Pl.* p. 124

Hab. Northern India Kashmir (elevation 9000 feet) Cashwal (elevation 11000 feet) Europe from Norway the extreme South Caucasus Ural and Altai New Mexico

•  
HALL No. LX



*Asplenium septentrionale*  
(Sw.)







## ASPLENIUM

**ASPLENIUM RUFUMURARIA** (L.) Small caudex short very fibrous indistinctly paleaceous stipites tufted 2.5 inches long slender green purple below fronds subcoriaceous about as long as the stipes deltoid bi tripinnate pinnules obovate or cuneate (when young simple and reniform) obtuse or truncated entire or cleft or incised at the apex veins flabellate dichotomous sori linear crowded sometimes elongated crowded involucre broad cross at the margin — *Hook Sp Fil* iii 176 — *Linn Sp Pl* p 1,541 — *Sm Engl Bot* t 150 — *Sw Syn Fil* p 85 — *Willd Sp Pl v* p 70 t 80 B — *Moore Fil Brit Nat Print* t 41 A — *Mellen Fil Hort Lips* p 143 — *Asplen* p 143 — *A murorum*, *Lam A murale* *Jernk Aspl multicaule* L. A *Mittholz Gasp et Cuss Scolopendrium Poth* *Amesum*, *Newm Tarachia* P.

The specimen figured is from Kashmir

**Hab** Throughout Europe North Asia, Kashmir Tibet & Cape Algeria N America

PLATE N. LV



*Asplenium Ruta muraria*  
L.





## ASPLENIUM

**ASPLENIUM ADIANTUM NIGRUM (L)** Caudex stout (old ones thickly clothed with the remains of old stipites) horizontal stipites densely tufted castaneous and generally ebeneous at the base often a span and more long frond a span to a foot and more long ovate or ovato oblong acuminate firm membranaceo coriaceous intent bi tripinnate, primary pinnae petiolate ovato acuminate, secondary also petiolate tertiary usually sessile from a cuneate base ovate or oblong or lanceolate or even linear more or less acuminate but obtuse inciso pinnatifid lobes coarsely and sub spinuloso serrate veins pinnated erecto patent sori copious approximate linear oblong at length confluent involucre firm membranaceous pale brown entire rachises alate —*Hook Sp Fil* iii 187 —*Linn Sp Pl* p 1541 —*Sw Syn Fil* p 84 —*Willd Sp Pl* v p 346 —*Schk Fil* p 74 t 80 A —*Engl Bot* t 1950 —*Metten Asplen* p 144 —*Moore Ferns Nat Print* t 36 —*Moore Ind Fil* p 109 —*A Orsopterus* L (according to Moore, but Mettenius refers this to the var *acutum*) *A argutum Klfs En Fil* p 176 —*A humile Bl En Fil Jav* p 185 —*A Silesiacum Milde*, —*A nigrum, Bernh* —*A luridum Salisb* —*A capense, L (fide Moore)* *Tarachia Pr* —*Var β acutum* Pollin pinnae pinnules and segments narrower often linear acute or acuminate *Moore Brit Ferns Nat Print* t 37 —*A. acutum Bory in Willd Sp Pl* v p 347 —*A productum Lowe Frans Cambi Phil Soc vi* p 524 —*Var γ obtusum* Moore, pinnules and lobes very broad more acutely dentate —*A Ad. nigr v Capense, Schlecht Adumb. Fil Cap* p 31 t 18 —*A obtusum Kt Willd Sp Pl* v p 341, —*A cuneifolium, Vis Fil Ital Fragn* p 16 t 18 —*A Serpentinum Tausch and Henfl Aspl Europ* p 81 t 1 2 —*Mr Moore* refers hither *A fissum Weism* —*A forsteri* and *A novum Sadl* —*A incisum, Opi* —*A multicaule Scholtz* and *A tabulare Schrad*

The specimen figured is from Simla

**Hab** All three varieties are found throughout Europe and Northern Asia N and S Africa Madaga the Canaries Azores, Cape de Verd Islands St Helena Abyssinia, Java In Northern India they are found in Afghanistan and at Mussoorie, Kashmir, and Simla



*Asplenium Adiantum nigrum*  
(L.)







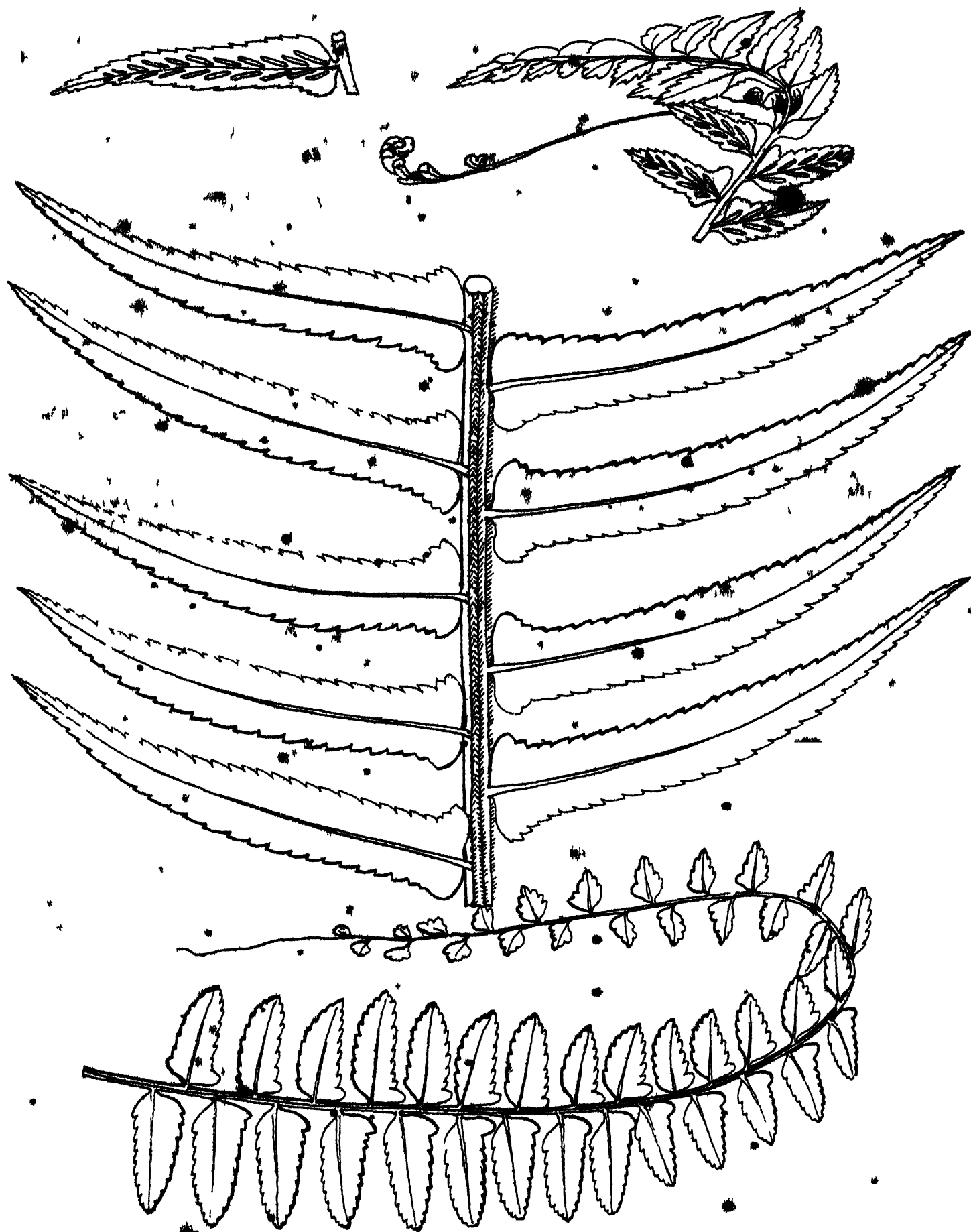
## ASPLENIUM

**ASPLENIUM LONGISSIMUM** (Bl.) Caudex stout woody paleaceous with rather long brown lanceolate subulate scales, stipites and rachis dark lurid black deciduously villosa paleaceous, fronds very variable in length 1 3 and more feet elongate oblong lanceolate subcoriaceous opaque dark brown (when dry) the extremity running out apparently with a continuous growth to a long narrow acumen rooting and bearing young plants at the apex pinnated pinnae 3 4 inches long very numerous horizontal sessile moderately distant from a broad ( $\frac{1}{2}$   $\frac{3}{4}$  inch) cuneated base lanceolate gradually and much acuminate more or less strongly serrated especially above the middle, superior base with a triangular auricle inferior base often also auricled or with an angle, inferior pinnae gradually smaller and very obtuse, veins erecto patent once or twice forked sori copious close placed regular nearer the costa than the margin involucre subcoriaceous rigid narrow brown — *Hook Sp Fil* iii 148 — *Bl En Fil Jav* p 178 — *Mett Asplen* p 147 — *Aspl flagelliferum*, *Wall Cat n* 219 (where, for Sylhet read Singapore) *Aspl sordidum* *Aze Bot Zeit* vi p 171 (*vide Metten*)

The figure is taken from Sir W. Hooker's 'Species Filicum'

Hab. Mergul, Birmah, Singapore Malacca Java Mauritius and Diego Garcia

PLATE No. LVIII



*Asplenium longissimum*  
(Rhine)





## ASPLENIUM

**ASPLENIUM VIRIDE** (Huds.) Caudices short creeping clothed with black subulate scales forming a closely compacted rooting mass stipites densely coespitose 2-4 inches long slender glossy black below then castaneous nearer the fronds stramineous fronds 3-6 rarely 6 inches long linear lanceolate membranaceous bright green (as is the slender rachis) glabrous scarcely acuminate pinnate pinnæ 2-3 lines long rather distant pinnate all petiolate rhombic ovate obtuse more or less obliquely cuneate at the base deeply but rather irregularly crenate. Scarcely at all lobed veins sub flabellate sori 2-4 near the disc remote from the margin oblong oblique at length confluent involucres very thin membranaceous soon obliterated.—*Hook Sp Fil* iii 144.—*Huds Fl Ang* p 453.—*Sw Syn Fil* p 80.—*Willd Sp Pl* v p 332.—*Schl Fil* p 68 t 73.—*Eng Bot* t 392.—*Moore and Lindl Ferns, Nat Print* t 40.—*Mettlen Asplen* p 139.—**A** *Trichomanes* var *ramosum* *Linn Sp Pl* p 1541, —**A** *intermedium*, *P. Del Prag* 1 233.—*Tent Plend* t 3 f 22, —**A** *umbrosum*, *Vill*

Hab Throughout Europe, Himalayas, Kumaon (alt 12 000 feet), N America

PLATE No LXIV









## ASPLENIUM

**ASPLENIUM BULBIFERUM** (Forst) Caudex stout horizontal or oblique paleaceous with long linear subulate scales at the summit stipites lurid green 4 inches to a foot long sometimes deciduously and sparsely paleaceous semiterete or broad and compressed fronds sub coriaceous membranaceous yet flaccid 1 3 feet long ovate lanceolate erect or pendulous dark green pinnate pinnatifid with lobes entire or toothed or usually bi rarely tripinnate primary pinnæ often proliferous 6 inches long petiolate more or less lanceolate acuminate pinnules in the normal form from ½ an inch to 2 inches long elliptical ovate and more or less pinnatifid with exserted sori or the pinnules are narrower elongated deeply divided and the majority of them quite dorsoid sori oblique involucre firm greenish rachises compressed — *Hook Sp Fil* iii 196 — *Forst Prodr* p 80 — *Syn Syn Fil* p 83 and 218 — *Schk Fil* t 79 — *Hook Ic Pl* t 423 — *Homb et Jacq Voy Pol Sud Pot* t 3 f 1 — *Hock fil Pl* \ *Zeal* ii p 34 — *Fl Tasm* ii p 146 — *Watten Asplen* p 106 — *Moore Ind Fil* p 118 *Cænopteris Des* — *Asplen vuidans Tabill Ser* tust *Cal d* i p 2 t 9 — *Watten Asplen* p 107 — *A bullatum Wall Cat* n 215 — *Athyrium macrocarpum Reichen Fil* p 188 — *Asplen Moore*

The specimen figured is from Sikkim (Dr Thomson) the plate has been named *A bullatum* (Wall) and should be altered to *A bulbiferum* Forst as that is an older name

Hab New Zealand Australia Nepal Sikkim Bhotan Tenang South America

PLATE No LV



*Asplenium bulbosum*  
(Wall.)





•  
ASPLENIEÆ

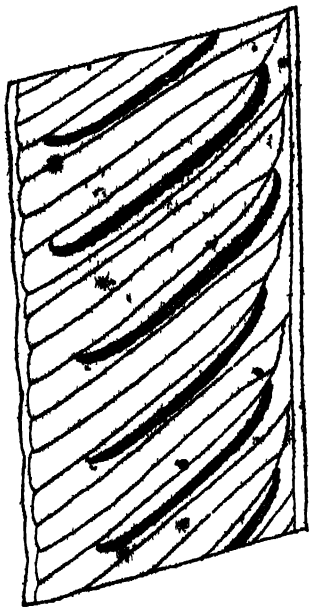
THAMNOPTERIS (See Ferns of Southern India p 42)

**THAMNOPTERIS GREVILLEI** (Wall) Fronds tufted subcoriaceous  $1\frac{1}{2}$  foot long pale whitish green when dry spatulate  
 (narrow long ovate finely acuminate suddenly contracted at the base and decurrent upon a long winged stipes) veins compact horizontally  
 1 distinct sori linear very narrow occupying the upper half or the entire broad portion of the frond rather distant —*Hook Sp Fil* in. 80  
 —*Hall Cat n* 1,036 —*Hook et Grev Ic Fil t* 128 —*Moore, Ind Fil p* 50

The specimen figured is from Birman, (Captain the Honorable J Dormer)

Hab Birman, Savoy, Mishmeec

PLATE No LXVI



*Thamnopteris*

*Grevillei*  
(Hall)







## ASPLENIUM

ATHYRIUM (See Ferns of Southern India p 50)

**ATHYRIUM OXYPHYLLUM** (Hook) Caudex very stout 12 inches in diameter ascending clothed with numerous persistent stipites of former years villous rather than paleaceous at the summit with very long ( $\frac{3}{4}$  of an inch) erect subflexuose ferruginous scales stipites clustered 4 inches to a foot long stramineous glossy below shaggy with the same scales as crown the caudex fronds 6-18 inches long from broad lanceolate to subdeltoideo ovate subcoriaceous generally much acuminate but rarely tripinnate, primary pinnae 8 inches in length often flexuose from a broad base lanceolate sometimes spinulose on the costa above generally much acuminate and sharply serrated only at the apex pinnules from an oblique cuneate base tapering into a distinct petiolule ovato-lanceolate acute lobato pinnatifid at the margin auricled at the superior base serrated towards the apex the lobes usually acute sometimes the pinnules are again pinnated veins pinnated sori in two rows one on each veinlet near the middle varying much in size rarely straight mostly curved or crescent shaped involucries often hippocrepiform brown membranaceous erose or fringed at the margin sometimes deciduous — *Hook Sp Fil* m 221 — *Polypodium oxyphyllum Wall Cat* p 324 — *Athyrium Moore Ind Fil* p 196 — *Aspidium eburneum Wall Cat* p 389 — (pinnae and pinnules more slender) *Asplenium J Sm Cat Cult Ferns* p 6 — *Mettlen Asplen* p 191 — *Lastrea J Sm Cat Cult Ferns* p 41 — *Aspidium squarrosum Wall Cat* n 356 — (Moore refers this to his *Athyrium foliolosum*) — *Polypodium dipanopterum Kuhn Linnaea* xxiii p 318 — *Aspidium Braun Ind Sem Berol* 1856 — *Mettlen Fil Hort Lips* p 93 t 19 f 14

The specimen figured is from the Khasya Hills (Dr Thomson)

Hab Nepal Assam Khasya Eastern Himalaya Bhutan

PLATE No LXXII







## ASPLENIEÆ

DIPLAZIUM (See Ficus of Southern India p 53)

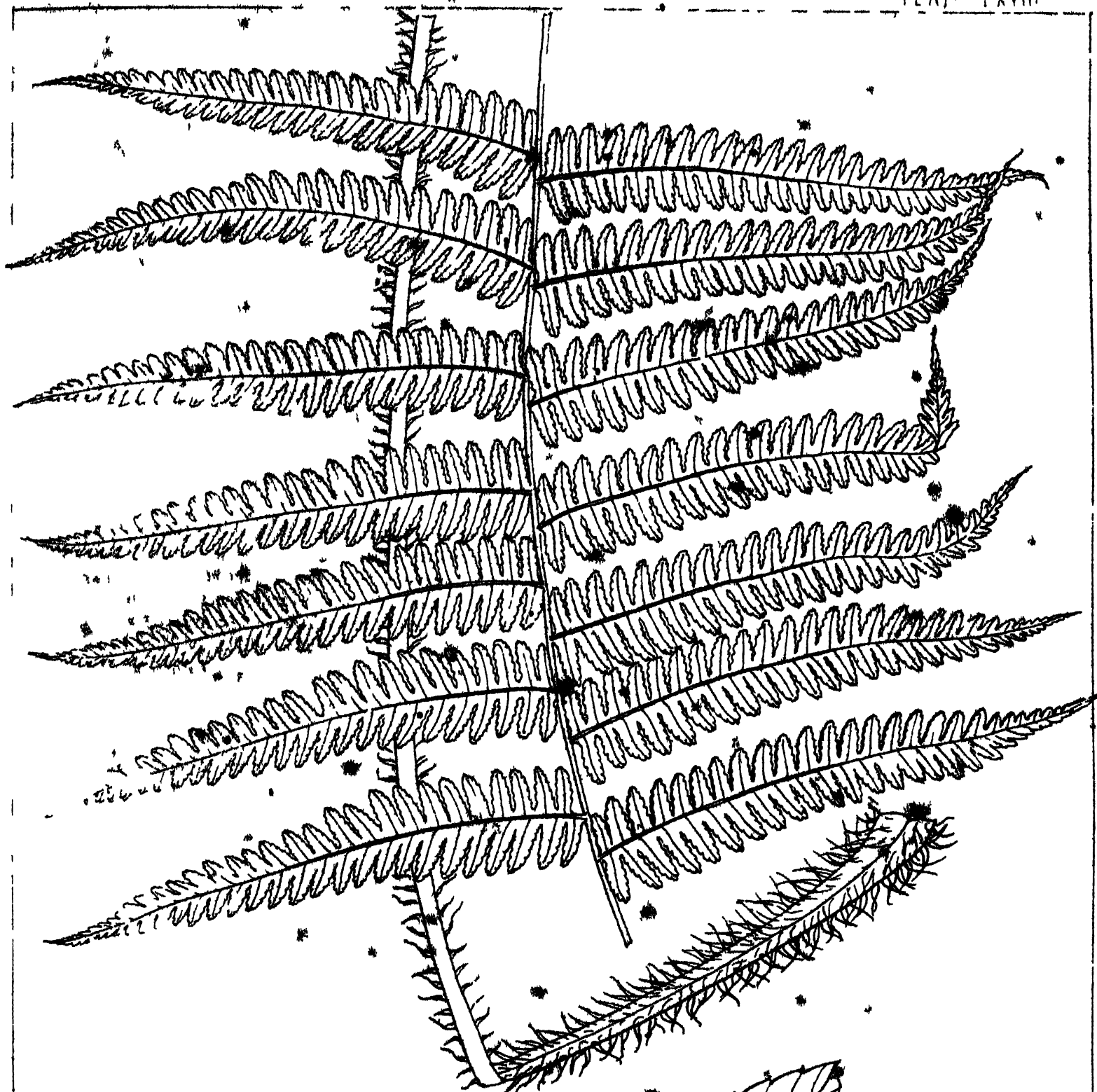
\*

**DIPLAZIUM THELIPTEROIDES** (Michx.) Caudex stout creeping stipites rather distant on the caudex a foot or more long stramineous glossy brown below fronds 1 3 feet long submembranaceous dark green lanceolate acuminate firm pinnate pinnae subremote horizontal 3 4 inches long sessile from a broad base linear oblong acuminate deeply almost to the rachis pinnatifid, segments oblong elliptical  $\frac{1}{2}$  of an inch long horizontal entire or obscurely serrated very obtuse veins mostly simple pinnated, sori linear oblong in two series approximate upon the segments soon confluent involucre convex pale firm membranaceous entire convex at the margin lower ones generally double rachis stramineous—*Hook Sp Fil* iii 229—*Michx Fl Bor Am* ii p 265—*Willd Sp Pl* v p 336—*Schk Fil* p 71 t 76 b—*Asa Gray Man B N U St* p 627—*Mett Fil Hort Lips* p 78—*Asplen* p 184,—*Athyrium*, *Desv Moore*, —*Diplazium Pr*,—*Aspl. acrostichoides*, *Sw Syn Fil* p 275

The specimen figured is from Sikkim—Himalaya (Dr Thomson)

Hab Northern India above Simla, Sikkim—Himalaya, Chinese Tartary, River Amur, North America, Canada to the middle of United States

PLATE No LXVIII



*Pipturus*

*thelypteris*







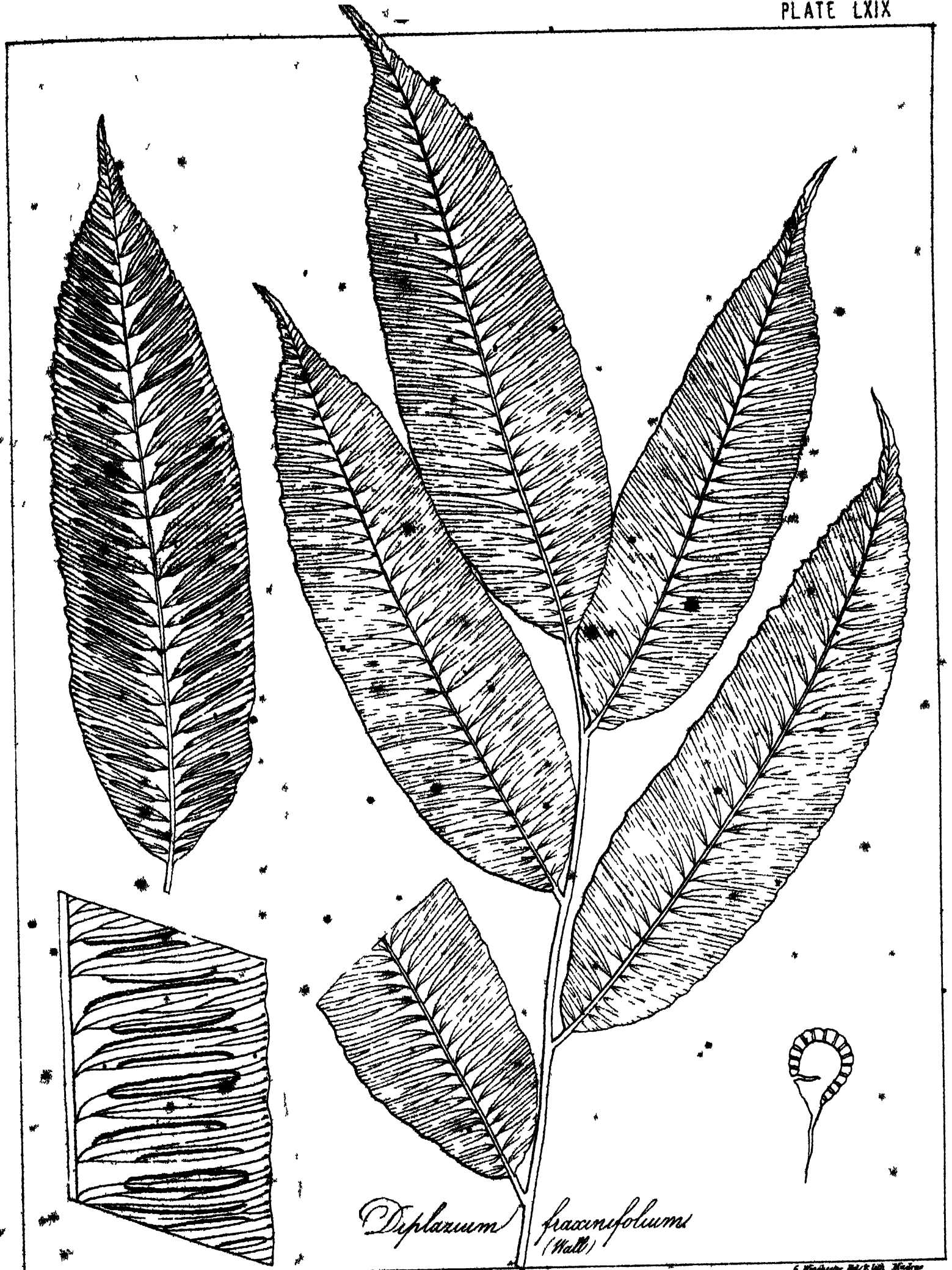
## DIPLAZIUM

**DIPLAZIUM FRAXINIFOLIUM** (Wall) Caudex ascending copiously fibrous nigro paleaceous at the apex stipites aggregated often a foot long brown subrobust below chiefly laxly and deciduously nigrescent paleaceous fronds  $1\frac{1}{2}$  foot long subcoriaceous firm subnitent brown when dry pinnate pinnæ 3 ll remote petioled patent 6 10 inches long broadly oblong lanceolate finely acuminate entirely or very obscurely serrate towards the apex subobliquely cuneate at the base veins fasciculate twice or thrice dichotomous parallel copious all free (rarely here and there anastomosing) sori copious linear elongate extending from the costa nearly to the margin involucre narrow — *Hook Sp Fil* iii. 240 — *Wall Cat n* 194 — *Hook 2nd Cent of Ferns* t 19 — *Diplazium Wall Herb* 1823 — *Moore Ind Fil* p 133 — *Diplazium elegans* (veins free) *Hook in Kew Gard Misc* ix p 343 — *C Wright in Kinggold and Rogers s Herb of U S expl exp* — *D falcatum Don ?* — *Aspl Domianum Metten Asplen* p 178

The specimen figured is from the Khasya Hills (Dr Thomson)

Hab Penang, Singapore, Khasya and Assam Hongkong

PLATE No LXIX



*Diplazium fraxinifolium*  
(Hall)





## ASPLENIEÆ

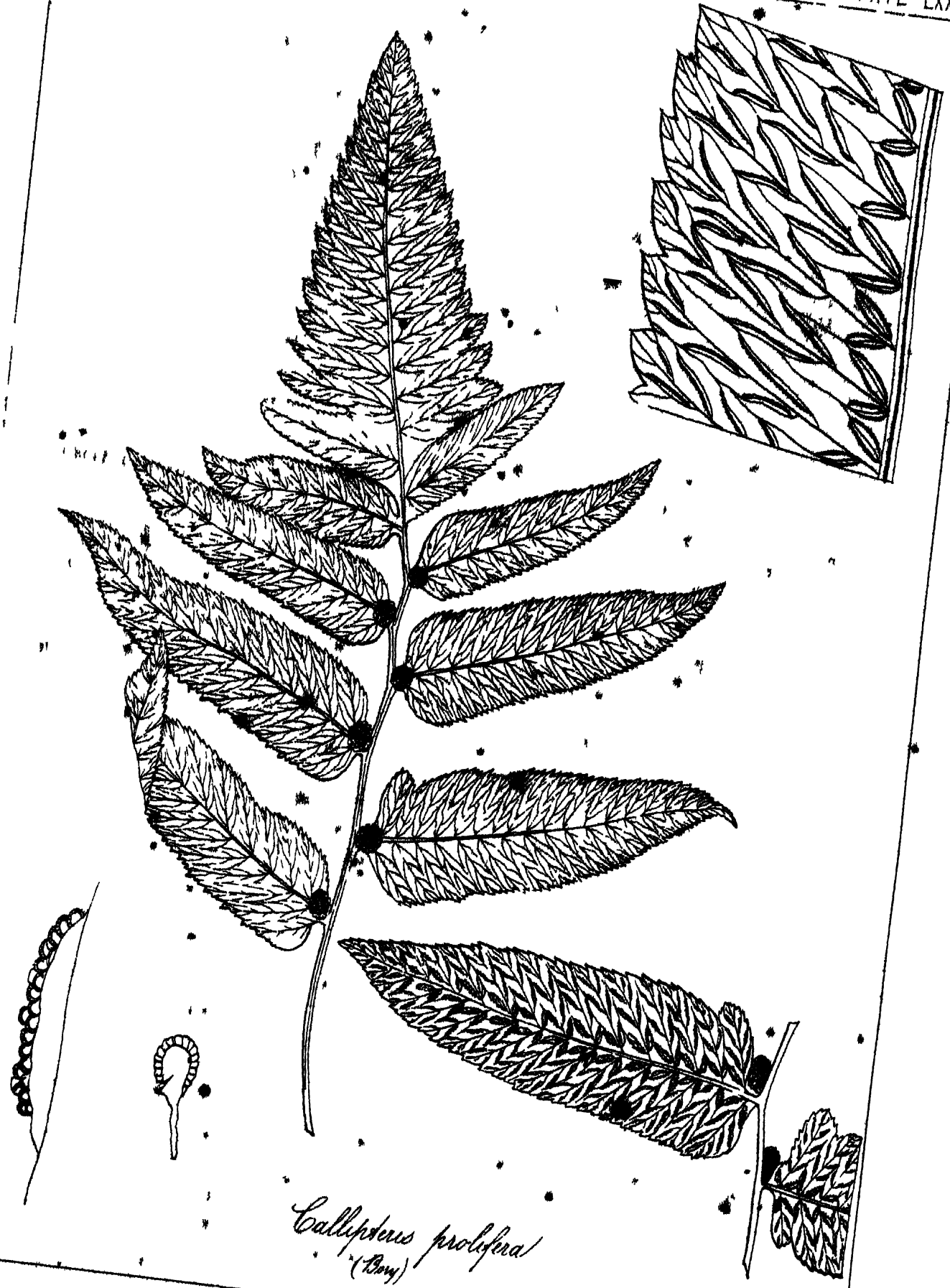
## CALLIPTERIS (Sec Ferns of Southern India p 54)

**CALLIPTERIS PROLIFERA** (Bory) Caudex erect scaly stipes stout 1 2 feet long deciduously scaly smooth or muricated fronds 2 4 feet long broad oblong acuminate subcoriaceous pinnated often with scaly proliferous axillary bulbs pinnæ numerous large horizontally patent sessile 6 10 inches and more long often 2 inches broad sessile from a broad truncated and subcordate and on each side subauricled base oblong gradually narrower to the acute or acuminate apex the margin entire or serrated or irregularly sinuato lobate rarely below again pinnate with oval oblong acute pinnæ terminal pinnæ large hastate triangular broad at the base and pinnatifid with long segments entire or serrated at the acuminate apex veins copious fasciculate pinnate branches or veinlets uniting and anastomosing more or less copiously forming triangular areoles next the costæ the rest more or less elongated, sori upon all the veins and anastomosing with them involucre narrow mostly dipteroid — *A. decussatum* Hook *Sp Fil* iii 270 — *Sw Syn Fil* p 76 and 260 — *Willd Sp Pl v* p 173 — *Mett in Asplen* p 173 — *Amisogonium* *P. Tent Pterid* p 116 t 4 f 13 — *Hook Gen Fil* p 56 — (Tab A f 14) *Aspl proliferum* *Lin Will Cat* p 236 — *Mitt in Fil Hort Lips* p 74 t 11 f 7 — *Diplazium* *Petit* — *Th Kaulf En Fil* p 182 — *Sieb Sjn Fil* p 30 — *D. bulbiferum* *By in Herb Hook* — *D. horridum* *Kze Annal* p 26, — *D. Swartzii*, *Bl En Fil Ja* p 191 — *D. repandum* *Bl Lin* 1 101 and in *Herb Hook* *Aspl spinulosum*, *Bl En Fil* p 193 and in *Herb Hook* *Aspl spinulosum* *Bl Fil* p 193 et in *Herb Hook* *Callipteris* *J Sm Asplenium Metten Asplen* p 172 — *Diplazium accedens* *Bl Fil* p 192 — *Asplenium* *Schubert R Dansk Velensk Afhandl* iv p 232, — *Digrammaria robusta*, *Fee Gen* p 218 t 18 B

The specimen figured is from Assam

Hab Mauritius Java Isle of Loyte Ternate Moluccas, Borneo Assam Solomon's Group, S Pacific, Feejee Islands, New Ireland, Tobie Island W Tropical Africa Fernando Po

PLATE No LXV



*Callipterus prolifera*  
(Row)







## ASPLENIEÆ

*Veins reticulated with marginal veinlets free*

## CETERACH (Willdenow Sp Pl v 136)

(*Ceterach* *Adanson* *Notolepium* *Newman* *Acrostichum* Sp *Cavanilles* *Asplenium* Sp *Auct* *Grammitidis* Sp, *Auct* *Gymnopteridis* Sp *Bernhardi* *Scolopendrium* Sp *Symons* *Vittaris* Sp *Bernhardi* *Gymnogrammitis* Sp *Sprengel* Sp *Blechnum* Sp *Auct*)

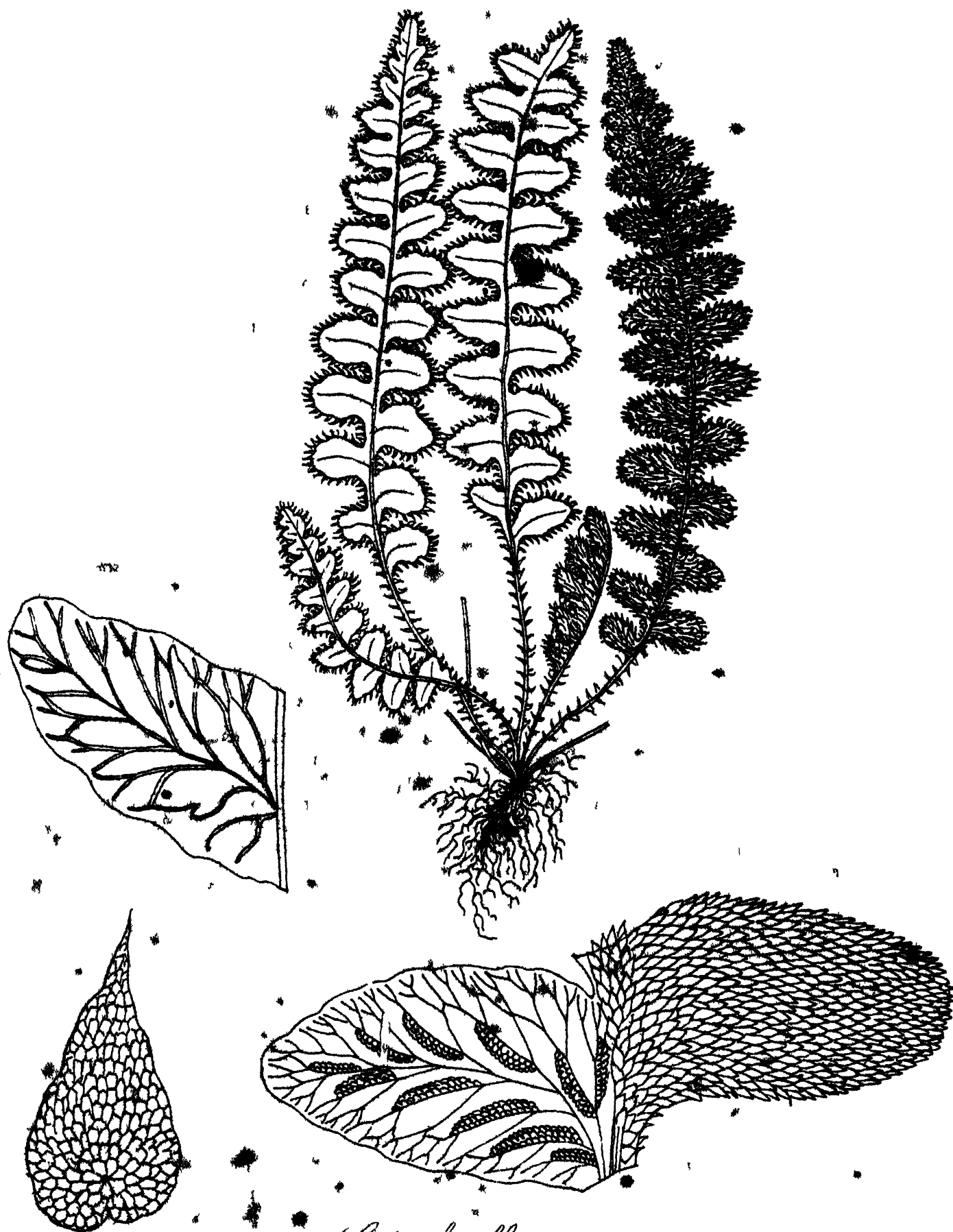
*Sori* linear oblong obsolete indusiate the receptacles lateral usually anterior & c in reference to the segment, (posterior in the basal sori) *Indusium* linear narrow plane sometimes obsolete (*Hook*) thin narrow (*Fee*) *Veins* obscure forked from a central costa parallel and soriferous below anastomosing irregularly near the margin the basal anterior *venule* (& c anterior in reference to the frond) soriferous on its anterior side

Fronds pinnatifid coriaceous densely clothed beneath with membranous imbricated scales Rhizome short erect This genus is anomalous Its affinity is with the *Asplenium* on account of its lateral sori but the sori in the common species seem to be without covers —(*Moore*)

**CETERACH OFFICINARUM** (Willd) Caudex short thick densely rooting fronds 6 10 inches long caespitose lanceolate tapering below into a scaly slender stipes coriaceous opaque deeply pinnatifid subpinnate at the base green above and naked beneath densely clothed with imbricated tawny entire or toothed scales segments broad ovate or oblong horizontal obtuse lower ones or pinnæ much abbreviated, veins anastomosing copiously towards the margin sori short oblong involucre very narrow often obsolete *Asplenium* *Ceterach* —*Hook Sp Fil* iii 273 —*Linn Sp Pl* p 1538 —*Grammitis Ceterach Sw Syn Fil* p 23 —*Ceterach officinarum Willd Sp Pl* v p 136 —*Webb Fl Canari* iii p 413 —*Hook Gen Fil* t 113 *A and Brit Flora* ed 7 t 9 p 1 —*Mett Hort Fil Juss* p 80 —*Pappe and Kaus Syn Fil Afr Inst* p 23 —*Scolopendrium Ceterach Sm Engl Bot* t 1244 1 *Gymnogramme Ceterach* Sp

Hab Throughout Europe Asia Siberia Asia Minor Northern Africa North West India Persia Hindustan Afghanistan Kashmir, Azores Canary Islands Brazil

PLATE No LXXI







## ASPLENIEÆ

HEMIDICTYUM (*Presl Tent Pterid* 110)

(*Asplenidictyum* *J Smith* *Asplenn* *Sp Auct* *Tarachia* *Sp, Presl* *Diplazu* *Sp Hort*)

Indusiate linear elongate parallel oblique, the *receptacles* lateral anterior *Indusium* narrow membranaceous plane *Veins* simple or forked from a central costa *venules* parallel at the base reticulated towards the margin forming trapezoid or elongated angles the apices arcuately combined or connected by a continuous straight marginal *veinlet*

Fronds coriaceous or thin herbaceous pinnate sometimes large Rhizome thick erect —(*Moore*)

**HEMIDICTYUM FINDLAYSONIANUM** (Wall) Caudex erect stout woody scaly at the summit rooting below stipites and rachis compressed deciduously scaly below fronds 1 1½ foot long coriaceous (brownish green when dry) oblong pinnate pinnæ remote 5 16 or 17 erecto patent inequilaterally and subfalcately ovato lanceolate long acuminate entire or sinuato subangulate subauriculate unequally cuneate at the base and gradually attenuated into the petiole scarcely costate terminal one subtriangularly 3 lobed, veins subfimbriate diverging from an indistinct costa dichotomous free below anastomosing towards the margin into very elongated subhexagonal areoles terminal veinlets free or rarely combined in arches at the margin sori linear elongated but varying much in length originating at the centre but never extending to the margin involucre narrow —*Hook Sp Fil* iii 271 —*Wall Cat n* 191 —*Hook Ic Plant t* 937, (veinlets too copiously arched at the margin) —*A integerrimum Wall Ms* —*Hook et Grev Ic Fil t* 136 (inaccurate in the venation) —*Hemidictyum Finlaysonianum Moore Ind Fil p* 1 —*H Hookerianum, Moore Ind Fil p* 130, who quotes *A Hookerianum Wall Cat n* 2,682)

The specimen figured is from the Khasya Hills (Dr Thomson)

Hab Ienang, Mishmee, Sikkim Khasya, Assam Nepaul, Kumou

PLATE No LXIII



*Homodictyon Findlaysonianum*  
(Wall.)







## POLYPODIEÆ

*Margin of the frond revolute indusoid (i.e. the sori spuriously indusoid)*

**ALLOSORUS** *Bernhardt Schrad neues Journ Bot 1 pt 2 5 36 t 2 f 6*

(*Allosorus* Auct *Phacelobus* Desvaux *Homopteris* Ruprecht *Pteridis* S Auct *Cryptogrammis* Sp Auct  
*Struthiopteridis* Sp Auct *Steganiæ* Sp Auct *Onoclea* Sp Auct *Osmundæ* Sp Auct *Blechnæ* Sp Auct *Acrostichum* Sp,  
 Auct *Chelanthus* Sp, Auct *Onychium* Sp Fee)

Sori spuriously indusiate, rotundate covered by the revolute subherbaceous margin of the pinnules at length confluent into a transverse line (parallel to the margin) often becoming obuse the receptacles punctiform Veins in the fertile fronds simple or forked, from a central costa, in the more divided sterile fronds simple or forked in the ultimate segments venules free

Fronds dimorphous dwarf herbaceous bi tripinnate the fertile contracted, i.e. with revolute siliquiform pinnules. Rhizome short decumbent —(Moore)

**ALLOSORUS STELLERI** (Rupr) Crudez 4 6 inches high very slender filiform slightly scaly fronds thin membranaceous pale green bipinnate sterile pinnules obovate or subrhomboidal sinuato lobate fertile ones lanceolate obtuse crenate all more or less petiolate, terminal ones elongated veins remote simple or forked, sori subrotund involucres broad continuous very thin membranaceous whitish subconvex but close pressed stipes very slender dark brown glossy superior rachises winged —*Pellaea gracilis* Hook Sp Fil 11 188, —*Allosorus gracilis* Ir Gray *Man of the Bot of North U St* p 264 ed 2 p 591 t 9 — *Pteris gracilis*, Mich Fl 11 p 262 (not Fée) — *Cheilanthes gracilis* Kaulf Laum Fil p 209 — *Allosorus Stelleri* Rupr *Dist Crypt* Ross 17 — *Leidel Fl Ross* 14 526

The figure is taken from Sir W Hooker's Species Filicum

\* Hab N America, Canada N India Kumaon (alt. 10 000 feet) Champwa N W Thibet

PLATE No LXXIII



*Allororus Stelleri*  
(Rupe)





## POLYPODIEÆ

POLYPODIUM (See Feins of Southern India p 55)

**POLYPODIUM DRYOPTERIS** (L.) Caudex long creeping branched more or less scaly stipes a span to a foot or more long very slender stramineous scaly below fronds thin membranaceous 5 6 inches and more long pentangular deltoid tripartite bipinnate primary divisions long petioled (especially the terminal one) deltoid secondary pinnæ mostly sessile  $1\frac{1}{2}$  2 inches long oblong or ovate oblong rather obtuse deeply pinnatifid sometimes again pinnate at their base segments oval entire or the inferior ones pinnatifid serrate veins forked sori dorsal on the upper veinlet nearer the margin than the costule—*Hook Sp Fil* iv 250—*Linn Sp Pl* p 155—*Engl Bot t* 616—*Su Syn Fil* p 42—*Schk Fil t* 25—*Willd. Sp Pl v* p 209—*Hook et Arn Br Fl ed 8* p 580—*Ledeb Fl Alt a* ganninum his  $\beta$  is *P Robertianum*)—*Hook Brit Feins 4*—*Phegopteris Fil*—*Metten Phegopt* p 9,—*Polypod calcareum Ph N 1m Fil* ii p 639

Hab Throughout Europe N India Western Himalaya Siberia Japan Greenland, Northern United States

PLATE No LXXIV



*Polypodium Dryopteris*  
(L)







## POLYPODIEÆ

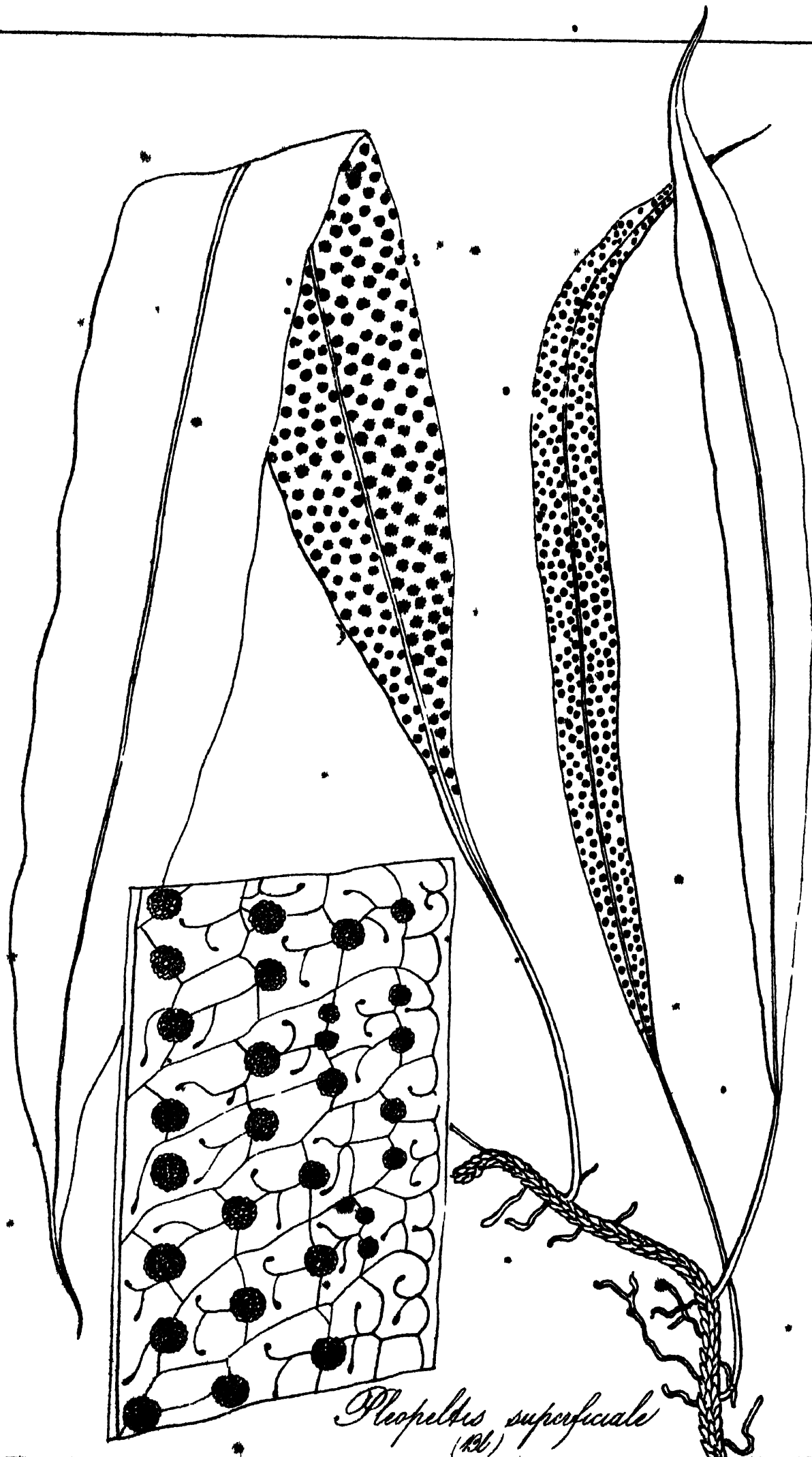
PIFOPELTIS (See Ferns of Southern India p. 57)

**PILOPELTIS SUPERFICIALIS** (Bl.) Caudex very long creeping or scandent branched tortuose sparingly paleaceous with subscissile short lanceolate scales stipules more or less distant 2-6 inches long often curved upwards fronds 6-12 inches long 1-2 inches broad straight or subfalcate firm membranaceous generally very opaque lanceolate or oblongo-lanceolate entire glabrous finely acuminate below gradually attenuated and decurrent upon the stipe no distinct costules primary veins obliquely patent flexuose slender united by transverse veins so as to form about four rows of large subquadrate areoles these are again divided into irregular lesser ones which include free simple or branched venulets and small arranged in two irregular series between the primary veins — *Hook Sp Fil v. 1* — *Bl Ind Tai p. 136 t. 56 f. 1-1* hymenodes *Wall Cat n. 283* (not of K. e. according to *Mettlen Ind Hort Ind p. 37 t. 20 f. 40-41* *Fee Ind Tai p. 110*)

The specimen figured is from the Khasya Hills (C. Blount's Herbarium)

Hab. Java (Chapadong mountains Penasseeum Khasya Bhutan (alt. 3000-6000 feet) Hongkong

PLATE No. LXXV



*Pleopeltis superficialis*  
(Bl.)





## POLYPODIEÆ

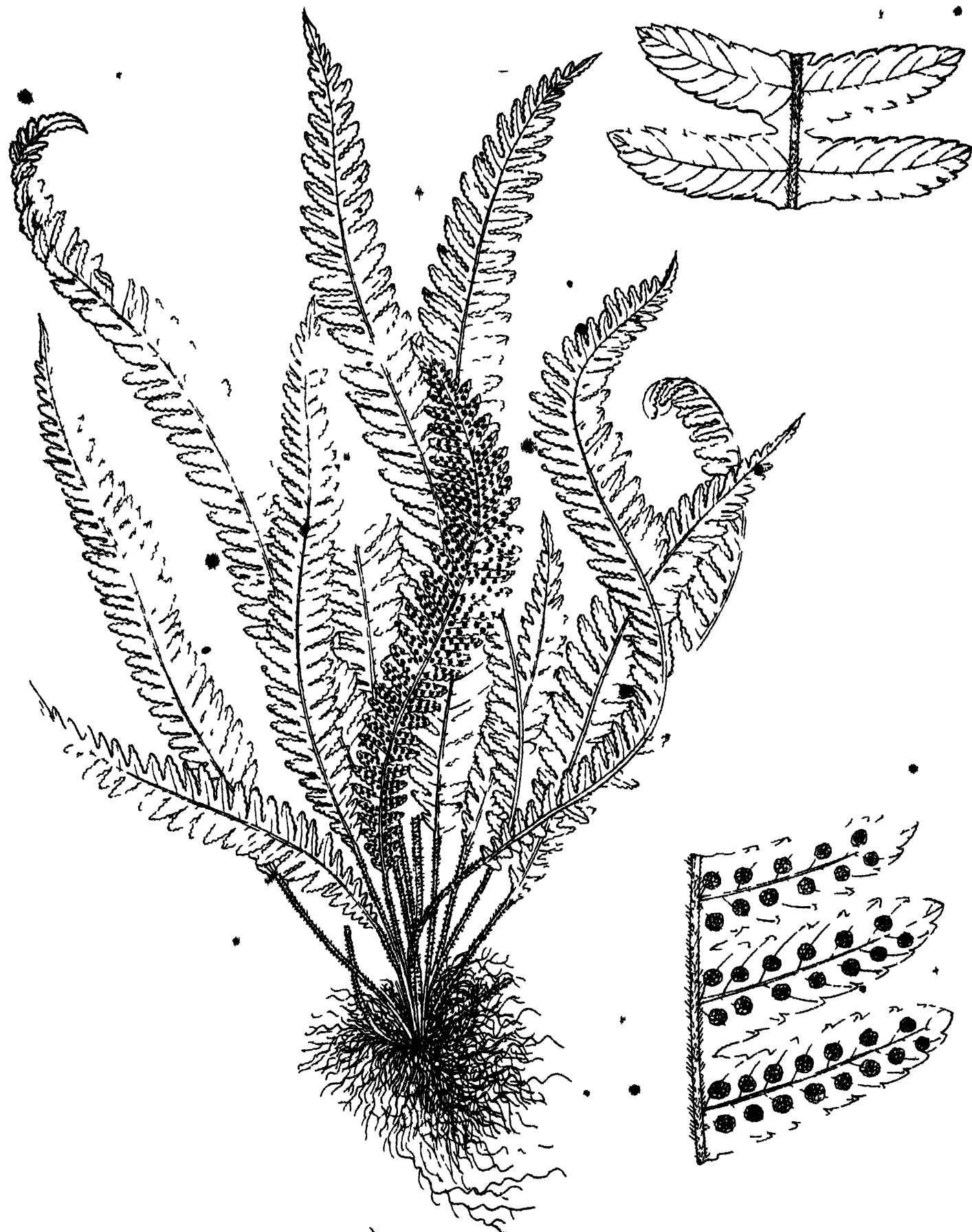
## POLYPODIUM (See Ferns of Southern India p. 5)

**POLYPODIUM SUBALCATUM** (Bl.) Caudex small obliquely erect, erumpent rather than palaceous stipites short 3-8 line long, patent pilose fronds firm membranaceous hairy on both sides and on the costa 6-8 inches long 1-1½ inch broad oblong lanceolate subacuminate attenuated below deeply almost to the rachis pinnatifid segment horizontally patent from rather broad and decurrent base linear lanceolate acute strongly serrated or pinnatifido serrate lower one remote distinct smaller than the rest costule slender flexuose veins evident distant oblique soriferous at the apex set small globose one to each serrature equidistant between the costule and the margin *Hook Sp Fil* iv 193 — *Bl Fil Jar* p 186 t 67 *A B* 1 sm in *Hook Journ Bot* t 111 p 534 *Mitten Polyp* 52  
— *I fil pendulifolium* — *Reichenb Fil* p 240 — *Gmel Mem* p 11 t 1 f 3 et *J β glabrum* fronds glabrous

The specimen figured is from the Herbarium of the Calcutta Botanical Garden

Hab. Nepal Kumaon (alt 8000 f et) Sikkim Himalaya Java Luzon

PLATE N. LXXXVI



*Polypodium sulcatum*  
var. *platyun* (11)







## POLYPODII E

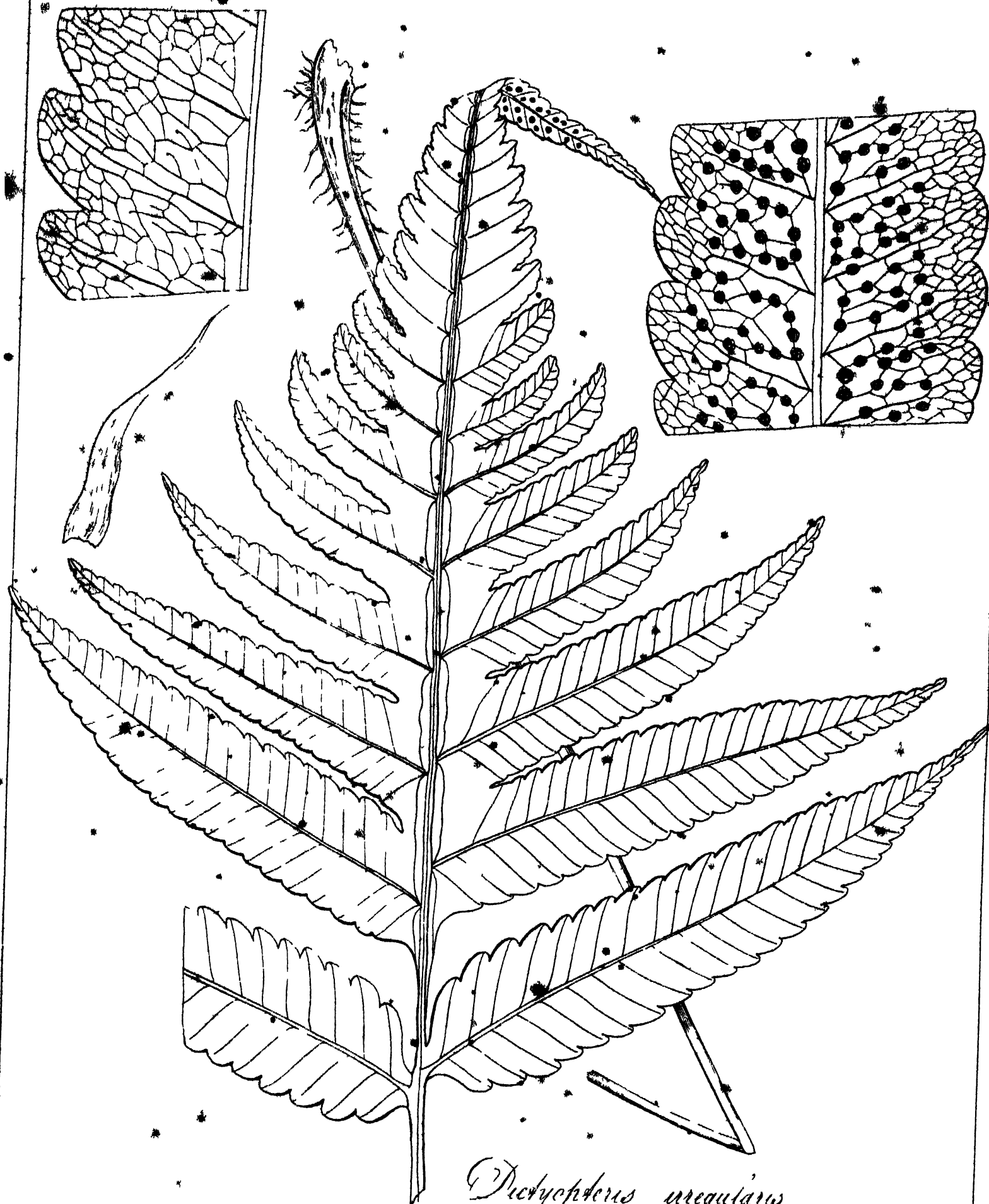
## DICTYOPTERIS (See page 1)

**DICTYOPTERIS IMULCUM** (Fig 1) Caudex stout ascending stipites tufted 4 inches to 1½ foot in length, black the o paleaceous at the base fronds suberect membranous minutely pellucido punctulate glabrous often subglaucous beneath pinnate with very numerous pinnae from 6 inches to 1 foot long 1½ inches wide more or less petiolate broad oblong acuminate the lowest half ovate unguately bipartite lower segment deflexed and sometimes free and 6 inches long all of them more or less deeply lobed fronds within one third of the costa the lobes oblong acute or acuminate entire or sinuato lobate terminal pinna petiolate pinnatifid costules on each lobe the veins anastomose copiously forming elongated areoles which are longest near the costa and costules areoles frequently including a free venulet sometimes dorsal or compital or even terminal on the free veins copious but rarely approaching the costa *Hort Sp Pl v 101 t 1 Rhiz Haul v 1 t 4 f 3 Bl Ind Jac p 164 t 72* —*Dictyopteris Pr Pent Iterid p 194 t 8 f 7 Moore* —*Aspidium Bl Ind Jac p 130* —*Aspidium Bl Ind Jac p 160* —*Dictyopteris Moore Ind Fil p 90* —*Phegopteris Moore Ind Hort J p 184 t 8 f 29* —*Phlegm macrodonta Metten Phlegopt p 31* —*Dictyopteris Ind Tent Iterid p 194 t 8 f 7 Moore* —*Aspidium Bl Ind Jac p 130* —*Aspidium Bl Ind Jac p 160* —*Dictyopteris Moore Ind Fil p 90* —*Phegopteris Moore Ind Hort J p 184 t 8 f 29* —*Phlegm macrodonta Metten Phlegopt p 31* —*Dictyopteris Ind Tent Iterid p 194 t 8 f 7 Moore* —*Aspidium Bl Ind Jac p 130* —*Aspidium Bl Ind Jac p 160* —*Dictyopteris Moore Ind Fil p 90* —*Phegopteris Moore Ind Hort J p 184 t 8 f 29* —*Phlegm macrodonta Metten Phlegopt p 31* —*Dictyopteris Ind Tent Iterid p 194 t 8 f 7 Moore*

The specimen figured 1 from the Calcutta Herbarium and represents the upper portion of a large frond *Aspidium*? **PL CXXIII** of the Ferns of Southern India is undoubtedly this plant and the name on the plate should be altered

Hab. Moulmein Arundinifera (Madras) Malay islands Borneo India on Malacca Fiji Islands

PLA E No LXXVII



*Dictyopteris irregularis*  
(Presl)





## POLYPODIFÆ

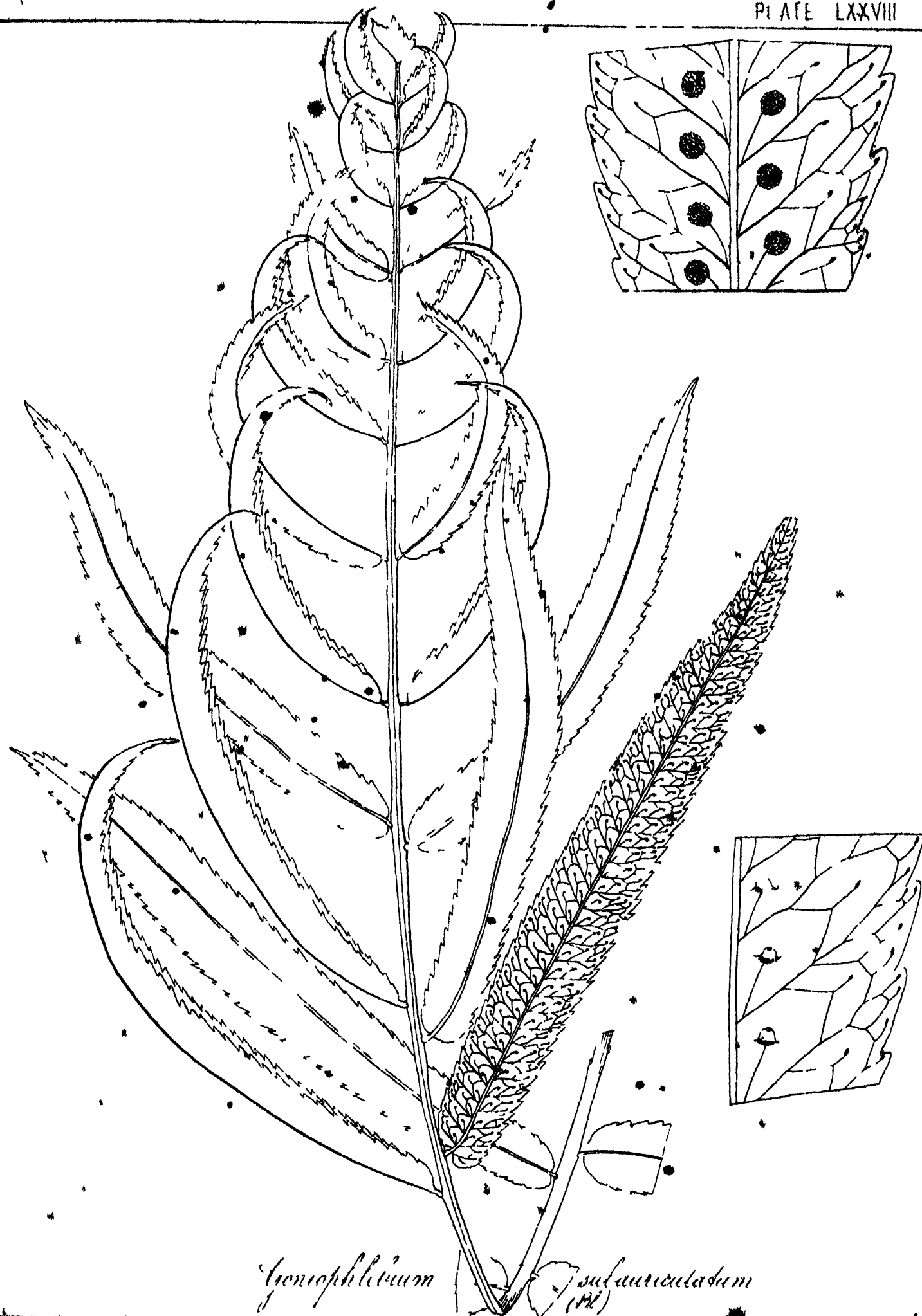
## GONIOPHLEBIUM (See page 5)

**GONIOPHLEBIUM SUBAURICULATUM** (Bl.) Caudex creeping stoloniferous densely clothed with narrow acuminate setaceous scales subpinnate stipites a span to a foot and more long sparingly paleaceous rufous brown fronds firm subcoriaceous membranaceous glabrous 2-6 feet long a foot and more wide pinnated pinna horizontal numerous yet remote 3-4 to 8-10 inches long  $\frac{1}{4}$  to nearly  $\frac{1}{2}$  an inch wide shortly petioled and jointed on the rachis from a somewhat cordate or truncated and occasionally auricled base linear lanceolate finely and gradually acuminate serrated veins forming a double costular series of areoles including a free venule of which the lower series is soriferous marginal veinlets not soriferous in a single series nearer the costa than the margin forming slightly elevated pustules on the superior side *Hook Sp Fil v 32 Il Fil Jav p 17 t 83 Metten Fil Hort Lips p 33* —P Reinwardt *Age (fide Metten)* *Goniophlebium De Vriese* —G Leopeltus *Fe* —var  $\beta$  *Serratifolia* pinna very coarsely serrated —*Goniophlebium serratifolium Brack Fil U S Expl Exped p 35* —*Polyp pallens Bl Fil Jav t 84* —f 1 *J Sm Metten Polypod p 81*

The specimen figured is from the Calcutta Herbarium (from Java)

Hab Khassya, Luzon Java Sumatra —Var  $\beta$  Fiji Islands Luzon Java

PLATE No LXXVIII









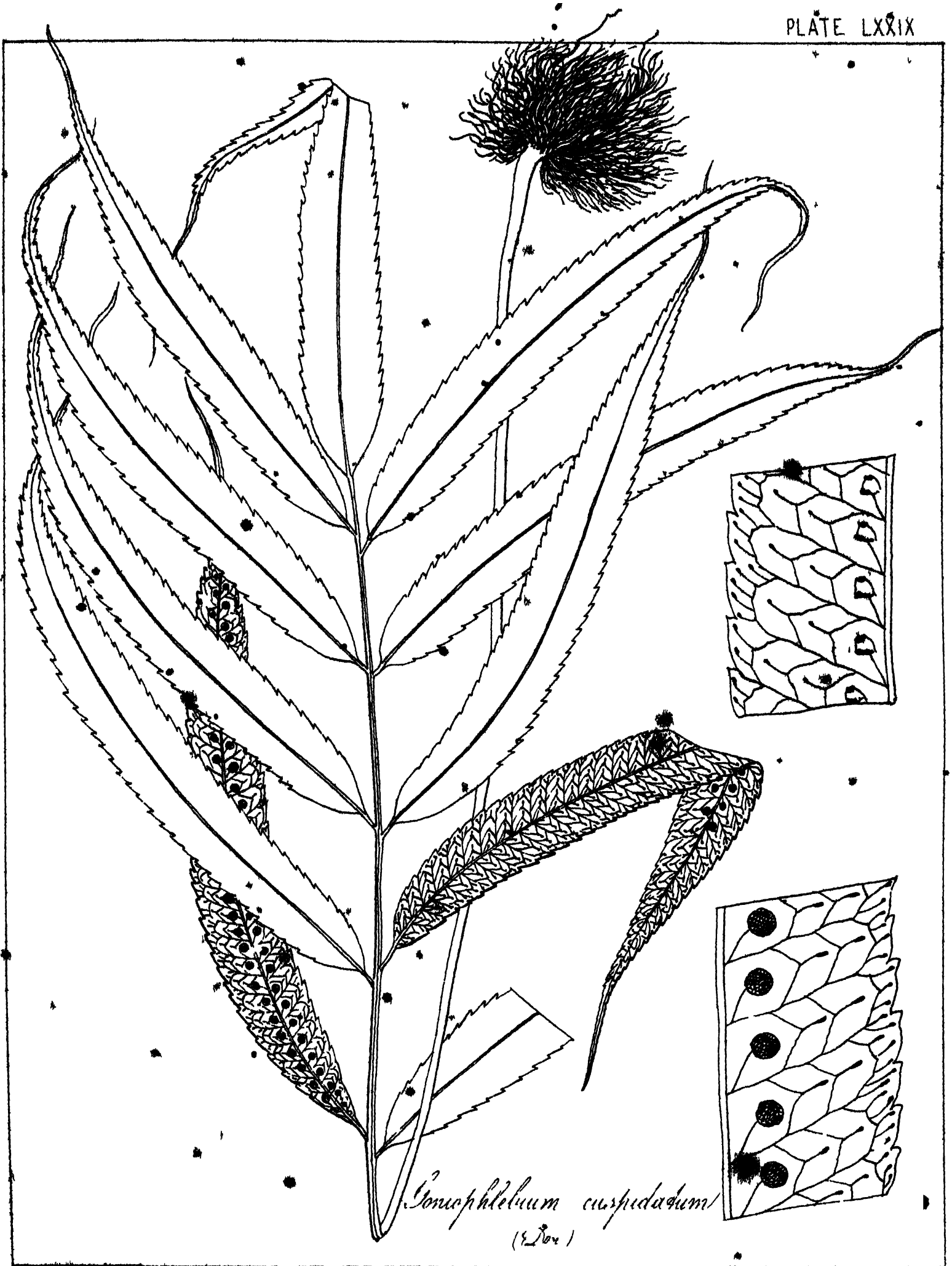
POLYPODIEÆ  
 GONIOPHLEBIUM

**GONIOPHLEBIUM CUSPIDATUM** (Don ?) Caudex creeping palcaceo cinnite stipites 8 10 inches or more long, fuscous glossy frond 2 3 feet long 1 foot wide oblongo ovate glabrous firm membranaceous pinnate pinnæ shortly petiolate and articulated upon the rachis very patent opposite or alternate 6 8 inches long  $\frac{1}{2}$   $\frac{3}{4}$  inch wide from a gradually attenuated narrow cuneate base elongato lanceolate finely and long acuminate serrated entire at the base and at the point veins forming two or three series of areoles including a free veinlet the costal series only soriferous sori much nearer the costa than the margin, more or less sunk and forming more or less distinct pustules on the back *Hook Sp Fil v 32 Don Fil Nep p 6 t Bl Fil Ind p 17 s 1 82 Metten Polyp 1 81*,—*Gonio phlebium, Pr*

The specimen figured is from the Calcutta Herbarium (from Java)

Hab Nepal, Java

PLATE No LXXIX



*Gonophlebium cuspidatum*  
(L. DC.)





## POLYPODIEÆ

\* *Veins reticulated with free included veinlets*

*Free veinlets divaricate*

DIPTERIS Reinwardt Regensb Bot Zeit 11 3

(Polypodi Sp Auct Drynariæ Sp J Sm)

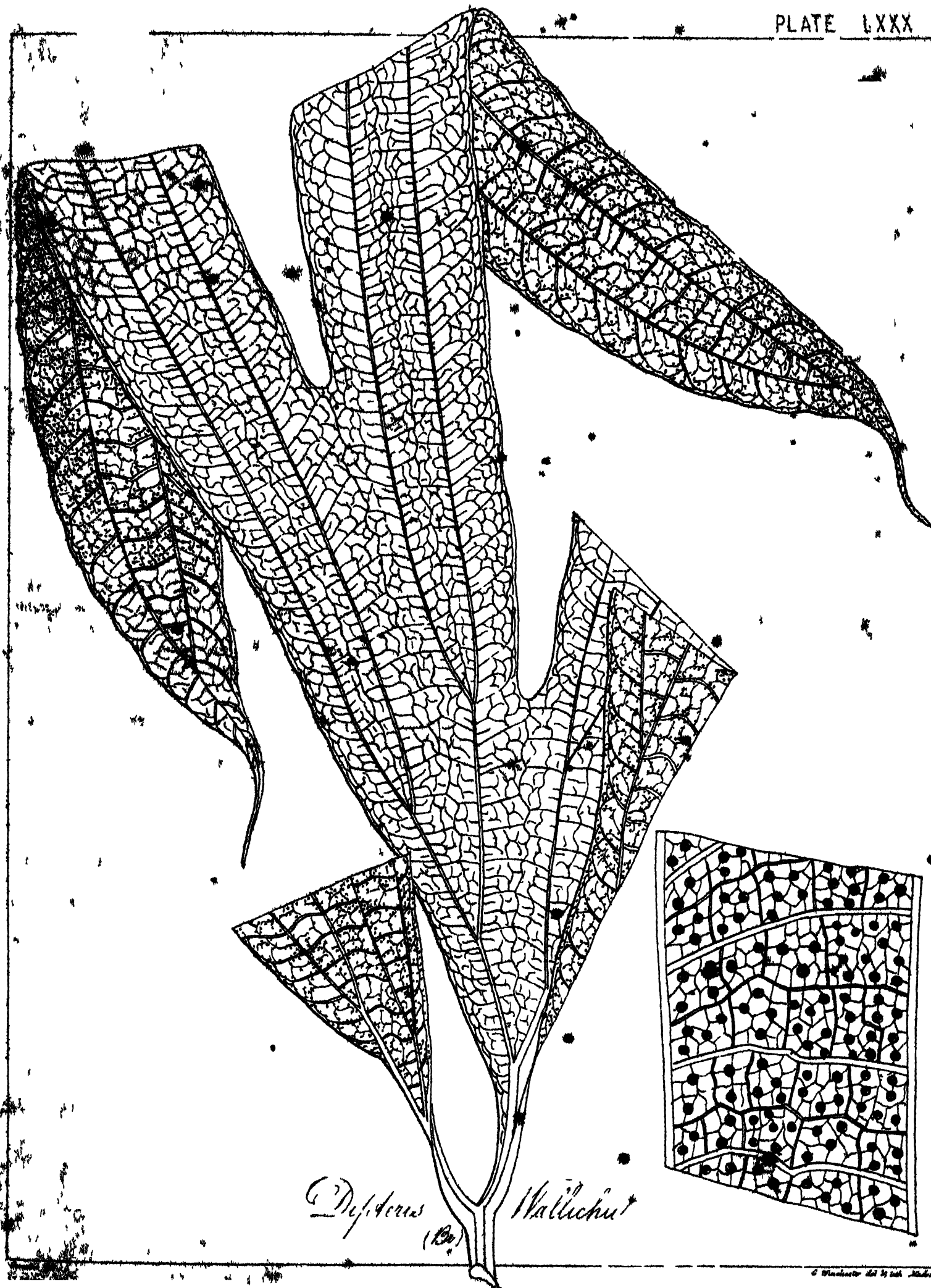
Sori non indusiate small round superficial the *receptacles* punctiform (1) Transversely sub serial between the branches of a dichotomous costa when the segments are confluent or (2) longitudinally uniserial on each side a central costa in the ultimate segments when more distinct Venation diverse (1) in the more confluent species the costa dichotomo flabelliform with the *veins* prominent transversely anastomosing the *venules* and *veinlets* (several series) thickly anastomosing the ultimate or penultimate soriferous the ultimate branches often free dilated at the apex or (2) in the more distinctly divided species *costa* central, the *veins* and *venules* irregularly anastomosing with divaricate free sterile *venulets*

Fronds binate digitate palmately lobed or repitito dichotomously partite elongately stipitate coriaceous Rhizome woody creeping the fronds adherent or not readily separable So remarkable and peculiar in habit that relying partly on the oligocarpous sori we have kept it distinct from our *Pleopeltis* with which in company with *Drynaria* it is technically allied (Moore)

DIPTERIS WALICHII (Br) Caudex creeping clothed with appressed copious black hard subulate setaceous scale wrinkled at the back stipites 1 2 and more feet long smooth and polished fronds coriaceous 1 2½ feet long and much wider than long dark green above pale yellowish ferruginous beneath flabelliform bipartite into two nearly equal broad cuneate portions which are palmately and dichotomously divided ultimate segments 6 8 10 inches long 1½ 2 inches wide oblong acuminate costæ from the summit of the stipes dichotomously branched through the disk of the frond a single pair runs through each terminal segment connivent at the apex venation manifest prominent beneath all the costæ are united by transverse flexuose costules these by a longitudinal flexuose vein through the middle into two nearly equal series of costular areoles then again into lesser ones all sub quadrangular sori small superficial copious scattered in the areoles but generally in series more or less perfect and accompanied by a resinous or gummy substance Hook Sp Fil 1 99 Br in Hook and Grev Ic Fil t 168 9 Wall Cat n 287 Metten Polypod p 119, —Drynaria J Sm —Dipteris Moo Ind Fil p 341 —Polyp macrocheris Wall Herb

The specimen figured is from the Khasya Hills—(Dr Thomson)

Hab Khasya Bhotan Assam Pundoa Mountains



*Dipteris* (Ba.) Wallichii







## POLYPODIFÆ

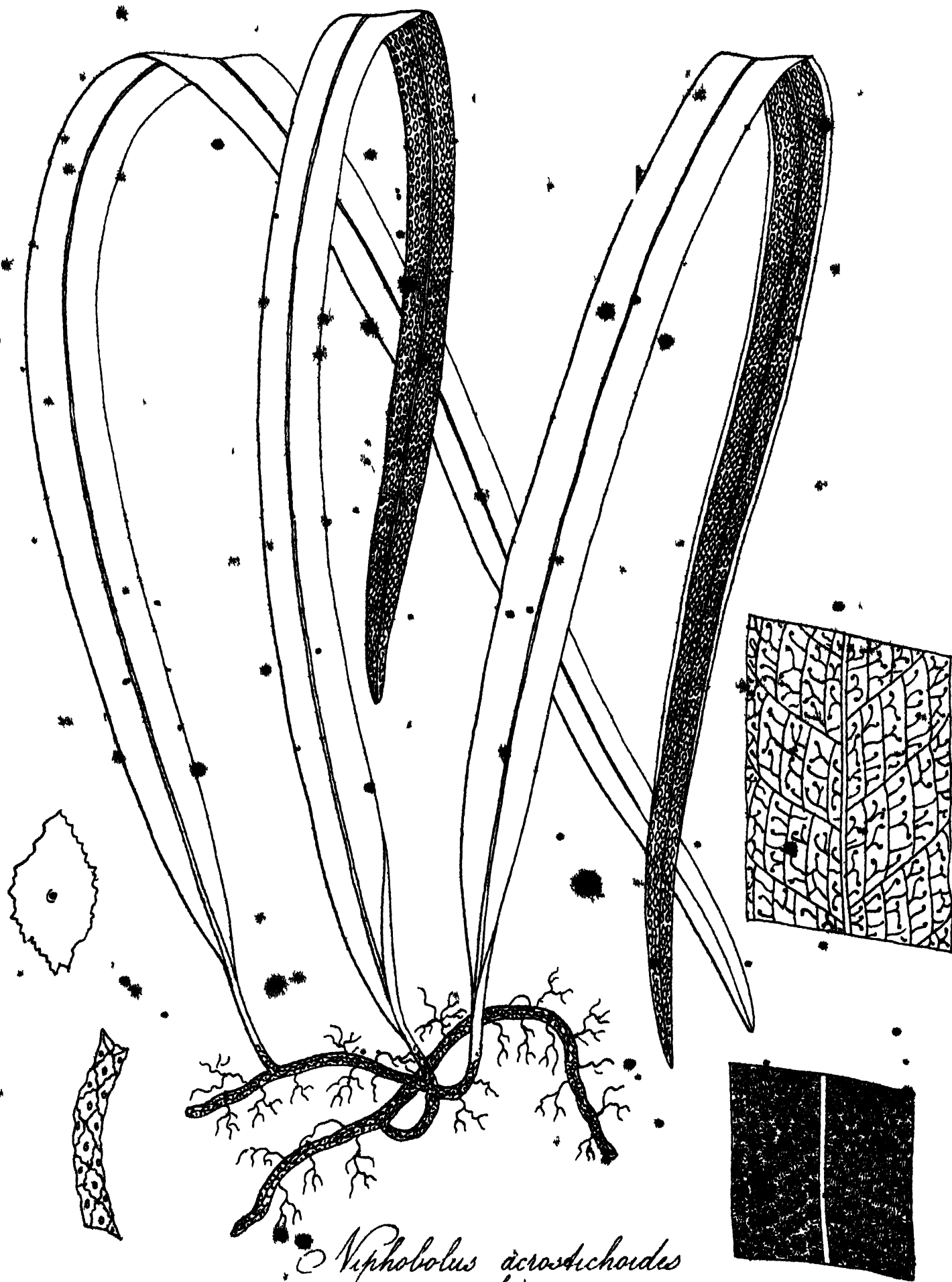
## NIPHOBOLUS (See Ferns of Southern India, ' p 61 )

**NIPHOBOLUS ACROSTICHOIDES** (Sw ) Caudex creeping branched younger portions squarrose with rather large bright ferruginous lanceolate subulate scales stipites 1 3 inches long frond hard coriaceous 1 3 feet and more long  $\frac{1}{2}$  1 inch wide glabrous above beneath whitish or tawny stellate tomentose (tomentum very deciduous) elongate lanceolate or linear obtuse *Stipules* fronds generally the broadest areoles with 3 6 veinlets free and simple or variously forked and anastomosing some rather small prominent very compact generally occupying the upper part of the frond arranged in 6 8 oblique very close series between the costules *Hook Sp Pl* v 41 *Sw Syn Fil* p 29 and 225 *An Forst Prodr* 431 *Metten Polyp* p 128 *Bl Prodr* p 146 —Cyclophorus *P Niphobolus puberulus Bl Fil Jav* p 56 t 23,—Cyclophorus glaber *Desv* (not *P Samarensis Metten Polyp* p 123 ),—Cyrtosorium *P Polyp furfuraceum Wall Cat n* 278

The specimen figured is from the Calcutta Herbarium (from Java)

**Hab** Moulmein, Ceylon Java Isle Sumar, Molucca Islands and New Hebrides N E Coast of New Holland Pohnia \*

PLATE No LXXVI







## DICKSONIEÆ

B *Indusium distinctly two valved*

DICKSONIA L. Heritier Sertum Anglicum, 30

(*Dalantium Kaulfuss Presl* — *Culcita Presl* *Leptopleuria Presl* *Cystodium J. Smith*, *Davalliæ Sp. Auct.* *Cibotium Sp. Auct.* *Microlepia Sp. Auct.* *Litaniæ Sp. Auct.* *Nephrolepis Sp. Mettenius*)

*Sori* involucreately indusiate globose or short transverse oblong marginal more or less reflexed the *receptacles* globose or transverse oblong terminal *Indusium* coriaceous double i.e. two valved the outer or accessory valve formed of a more or less attenuated lobule of the frond cucullate sometimes equalling in size but more frequently larger than the inner valve or proper indusium, which latter when smaller is less convex than the outer *Petioles* simple forked or pinnate from a central costa *venules* free

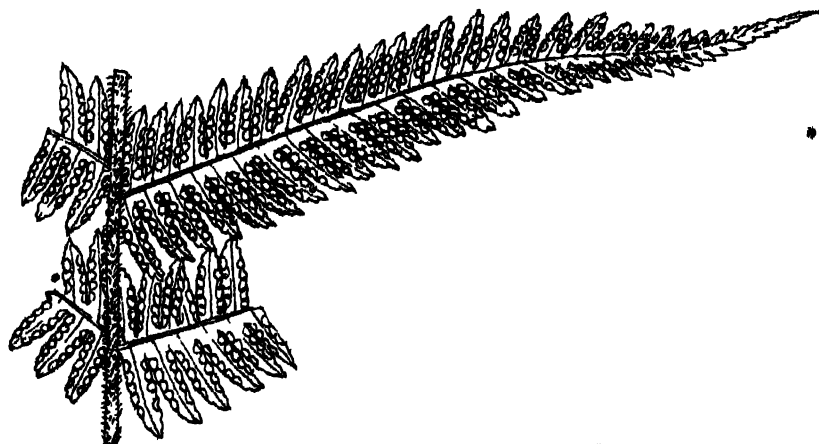
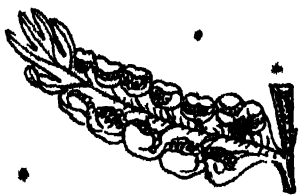
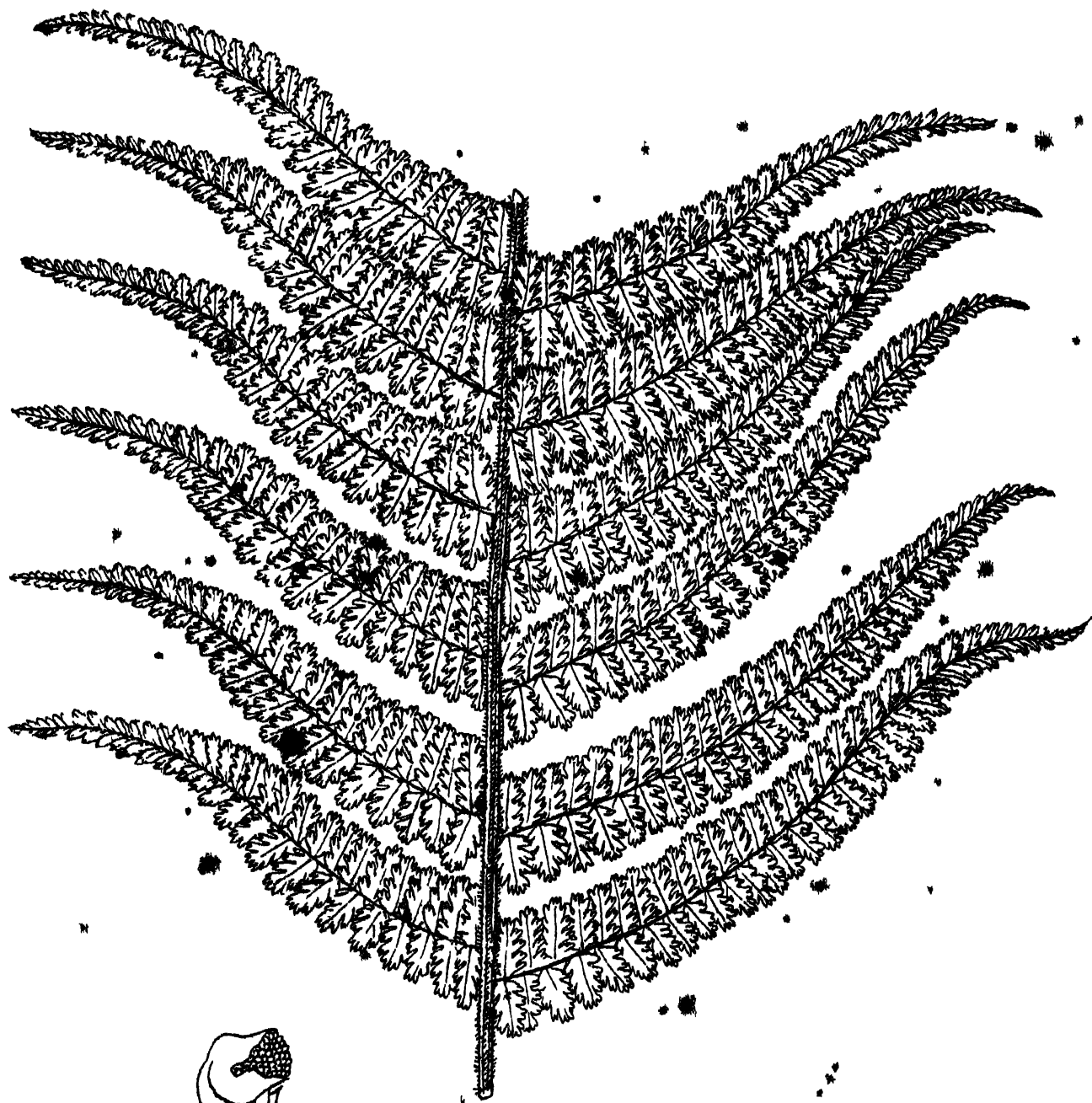
*Fronds* coriaceous usually large decompound sometimes pinnate the fertile portions appearing somewhat contracted *Rhizome* thick short erect or arborescent sometimes decumbent, criniferous *Genus* of noble ferns including several arborescent species It is distinguished from *Dennstaedtia* by the two valved not entire cup shaped indusium and from *Cibotium* by the more or less herbaceous texture of the outer valve of the Indusium which in *Dicksonia* is but a partially changed lobule of the frond (Moore)

DICKSONIA APPENDICULATA (Wall.) Lvery where especially beneath piloso glandular fronds lanceolate till much attenuated at the base bipinnate pinnæ narrow oblong almost linear pinnatifid the segments oblong entire or bifid the base decurrent on the rachis sori large globose copious upon the shortened teeth of the segments *Hook. Sp. Fil.* 179 *Wall. Cat. n. 6.*

The figure is taken from Sir W. Hooker's Sp. Fil.

Hab. Nepal Kumaon

PLATE No. LXXXII



*Dicksonia appendiculata*  
(Wall.)







## DICKSONIÆ

*Indusium distinctly two valved*

CIBOTIUM Kaulfuss Berl Jahrb der Ph (1820) Id Enum Fil 229 t 1

(Imonia, Gaudichaud —Hatter Men us U S, (Hook Sp Fil )—Dicksonia Sp Auct —Balantia Sp Auct —Aspidia Sp Auct —Polypodium, Sp Auct )

Sorci involucreately indusiate sub globose marginal reflexed the *reptacles* slightly elevated terminal *Indusium* two valved coriaceous distinct from the substance of the frond the outer valve larger cucullate the inner operculiform *Veins* forked or pinnate from a central costa *venules* free

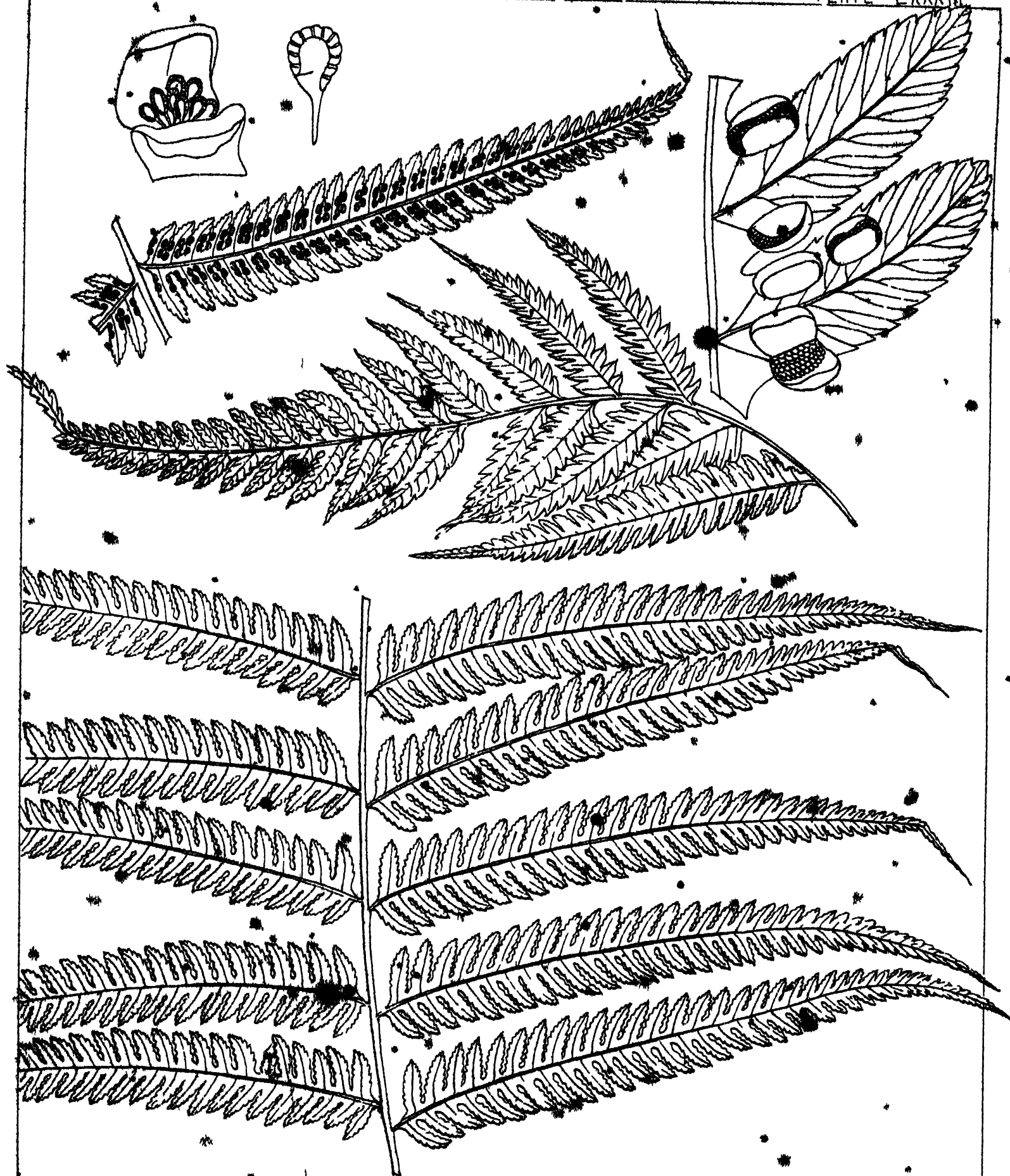
Fronds large decomposed Rhizome thick short decumbent or erect This genus like Dicksonia has two valved indusia the texture of the two valves is alike and evidently different from that of the frond on the extreme margin of which they are borne (Moore)

CIBOTIUM GLAUCUM (Hook and Arnt) Fronds bipinnate glabrous and shining on the upper side glaucous beneath with occasionally a few hairs on the rachis pinnules deeply pinnatifid lanceolate acuminate 4 5 in long the upper ones diminishing and tapering into a pinnatifid apex lobes or segments numerous more or less falcate veins simple or forked indusia very prominent and coriaceous usually 2 to 4 on each margin of each lobe or sometimes only 1 on each side at the base valves concave very nearly equal or the inner one rather narrower *Benth Fl Hongkong* 7 460 *Hook Sp Fil* 1 82 —C *glaucescens Kunze Hook & Grev* 1 82 —C *Assamicum Hook & Grev* 1 83 t 2 )

The specimen figured is from Assam

Hab Assam Hongkong S China Sandwich Island

PLATE No LXXXIII



*Cibotium glaucum*  
(Hook & Arn.)





## ALSOPHILEÆ

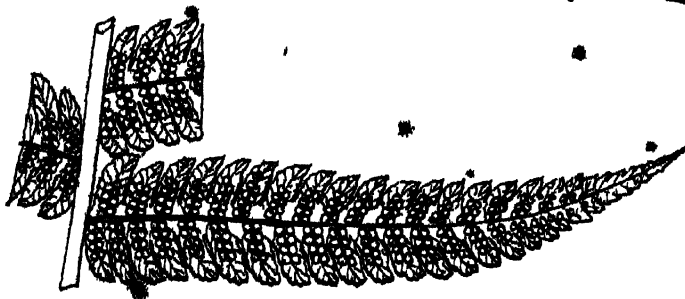
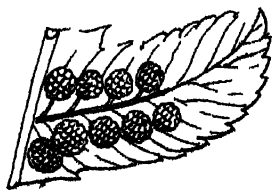
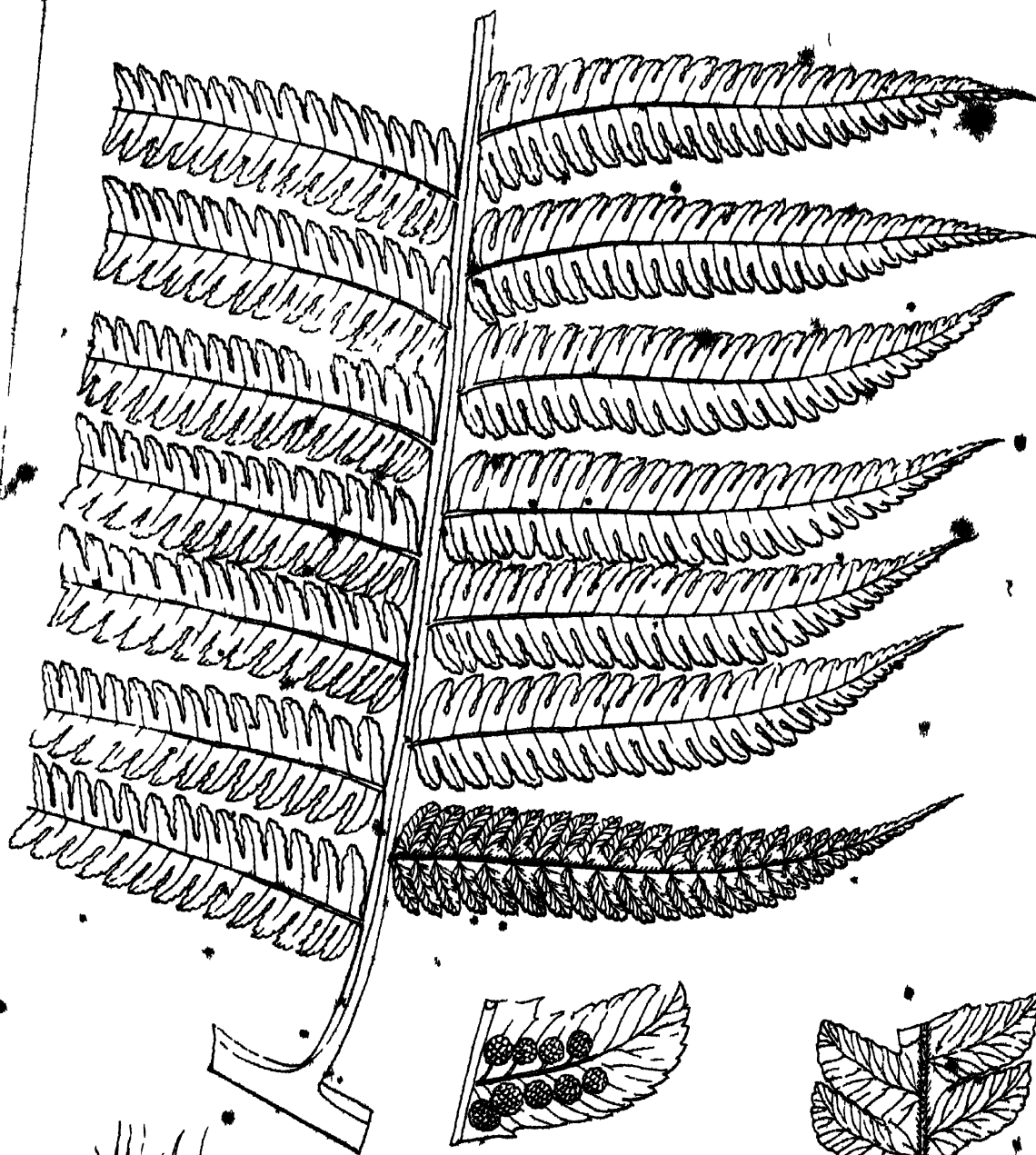
ALSOPHILA (See Ferns of Southern India p 19)

**ALSOPHILA COMOSA** (Wall) Unarmed stipes densely clothed with long chaffy pale brown deciduous scales, rachis strigose or almost setose above fronds bipinnate pinnæ united towards the apex so as to be there pinnatifid pinnules sessile or nearly so oblong lanceolate moderately acuminate submembranaceous pinnatifid about two thirds of the way down, segments ovate slightly falcate obtuse veins generally forked bullate scales none receptacles small slightly elevated *Hook S; Fil 1 3* — *A Comosa, Wall Cat n 319*

The figure is taken from Sir W Hooker's Species Filicum

Hab Khasya Hills, Singapore, Java

PLATE No LXXXIV



*Asophila comosa*  
(Willd.)







## AISOPHILA

**AISOPHILA CONTAMINANS** (Willd.) Aculeolate frond bipinnate coriaceous glaucous beneath pinnules oblong lanceolate acuminate deeply pinnatifid segments oblong falcate the fertile ones narrower rather obtuse crenulate sori upon forked veins in lines parallel with the costa and covering nearly the whole segment capsules mixed with hairs *Hook Sp Fl* 1: 52 — **A. Contaminans** *Wall Cat in Index* — *Isoetes contaminans* *Willd in Hort* 1823 (cat. n. 320) — *Chnoophora glauca* *Blume Fun Fl Ind* 1: 243 — *Aisophila glauca* *J Sm*

The figure is taken from Sir W. Hooker's Species Filicum

Hab. Sylhet Penang Java Molucca Luzon South Ceylon Philippines New Guinea Birmah

PLATE NO. LXXXV







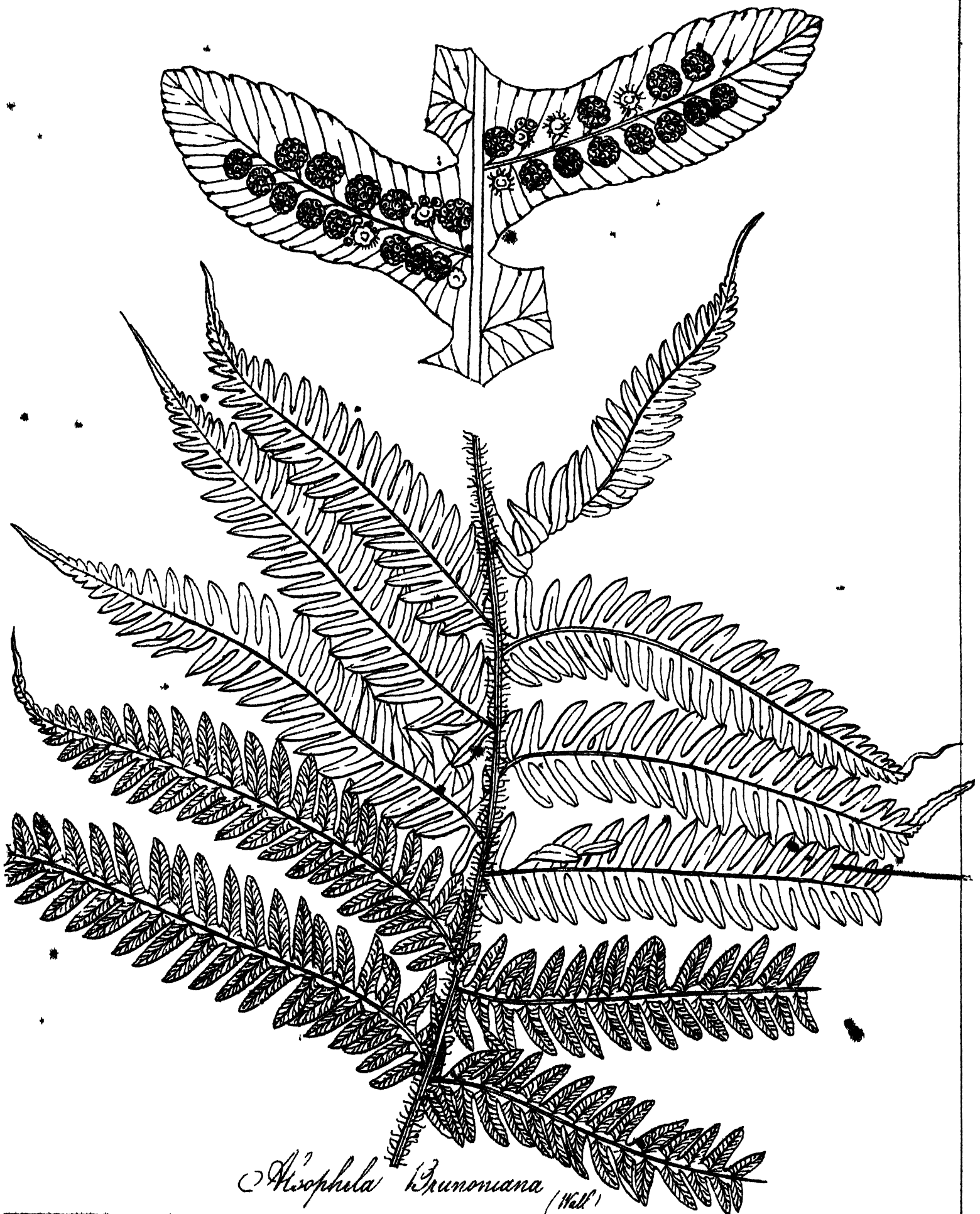
## ALSOPHILA

**ALSOPHILA IRUNONIANA** (Wall.) Unarined, fronds bipinnate pinnules lanceolate acuminate deeply pinnatifid coriaceous glaucous beneath veins once or twice forked bullate scales none margin recurved entire or crenulate sori in two rows occupying the greater part of the segments *Hook Sp Fil* 1: 52 *Wall Cat n* 7013

The specimen figured is from the Khasya Hills—(Dr. Thomson)

Hab. Khasya Hills Sylhet Mishmee Naga Hills Cachar

PLAIF No LXXYVI



*Adiantum Brunonianum* (Hed.)







## CYATHIA

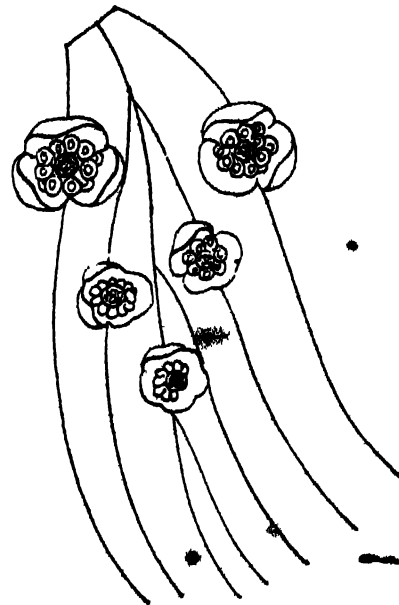
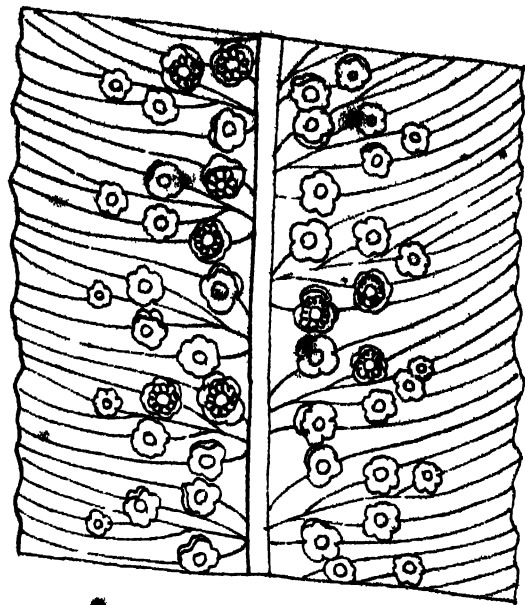
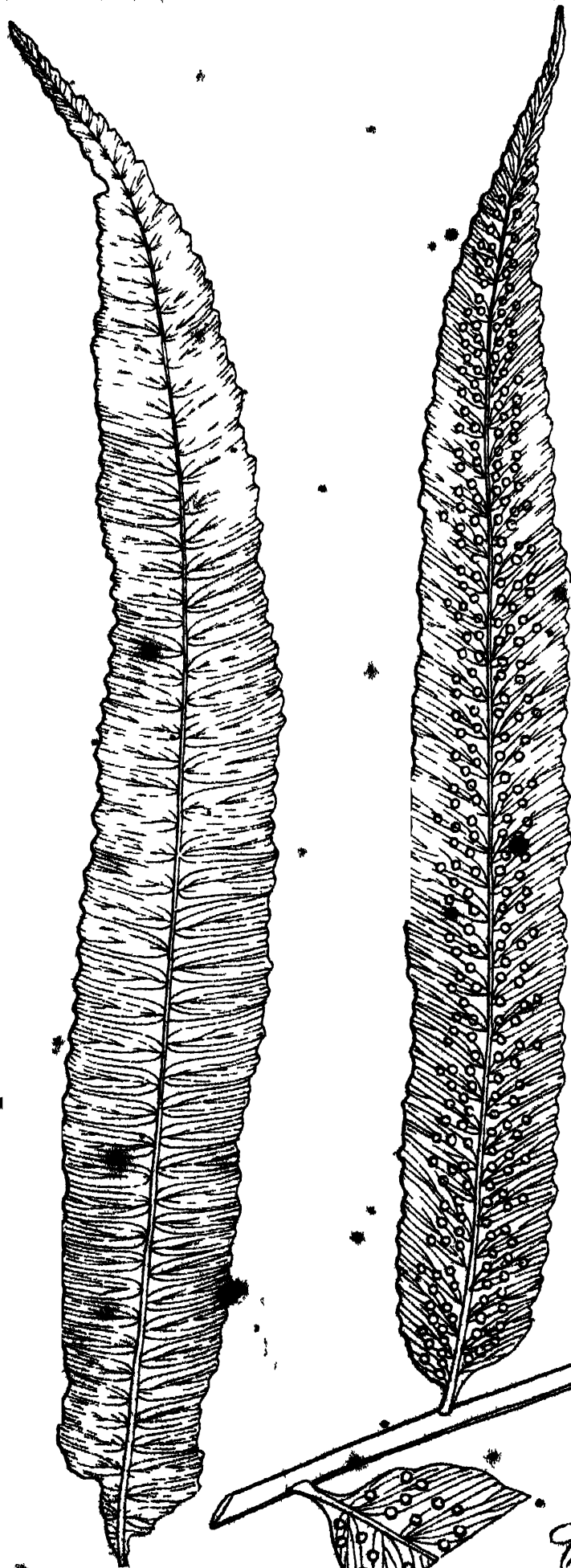
CYATHIA (See Ferns of Southern India p. 19)

**CYATHIA PHUNONIS** (Wall.) Stipes 1 to 2 feet long fronds 2 1/2 feet pinnated pinna 6-8 inches long alternate between membranous and coriaceous oblong lanceolate acuminate with a long narrow point obliquely truncated at the base and shortly petiolate smooth crenate often serrated at the margin above. Sori copious from the middle of the forked veins or veinlets. Involucre glabrous or slightly depressed bursting very irregularly at the top so as to become cup shaped with a lacerated and lobed margin. Capsules stalked. *Hb. Sy. Fil. 115 Will. Cat. n. 179* — *C. longifolia* *etensis* *Wall. in Herb. 1823* — *Cyathia Moluccana* *R. Br. Desc. Pl. 1322* — *Cyathia pinnata* *Kuhn. Cat. Town. Nat. Hist. 1817* — *Schizocana Brunonis* — *Hol. Gen. Fil. 12*, — *Schizocana Caudibanda* *Her. Gen. Fil. 314*

The specimen figured is from Penang.

Hab. Penang, Malacca, Molucca Island, Borneo.

PLATE No. LXXXVII



*Cyathea Brunonis*





## WOODWARDIAE

## WOODWARDIA (Sm Mem Acad Turin v 411 t 9)

(Ternstroemia *L.ubl* —Anchitax *L.ubl* —Blechnum *Syl. Ind.*)

*Sori* in a single series oblong or cblong linear sunk in a cavity of the frond parallel with and near the costa or costules / *epitact* on the transverse anastomosing veins which form a series of arches next the costa and from which veins originate and are more or less anastomosing sometimes very much so even to the margin. Involucres almost coriaceous usually persistent and opening with a lid above the cavity.

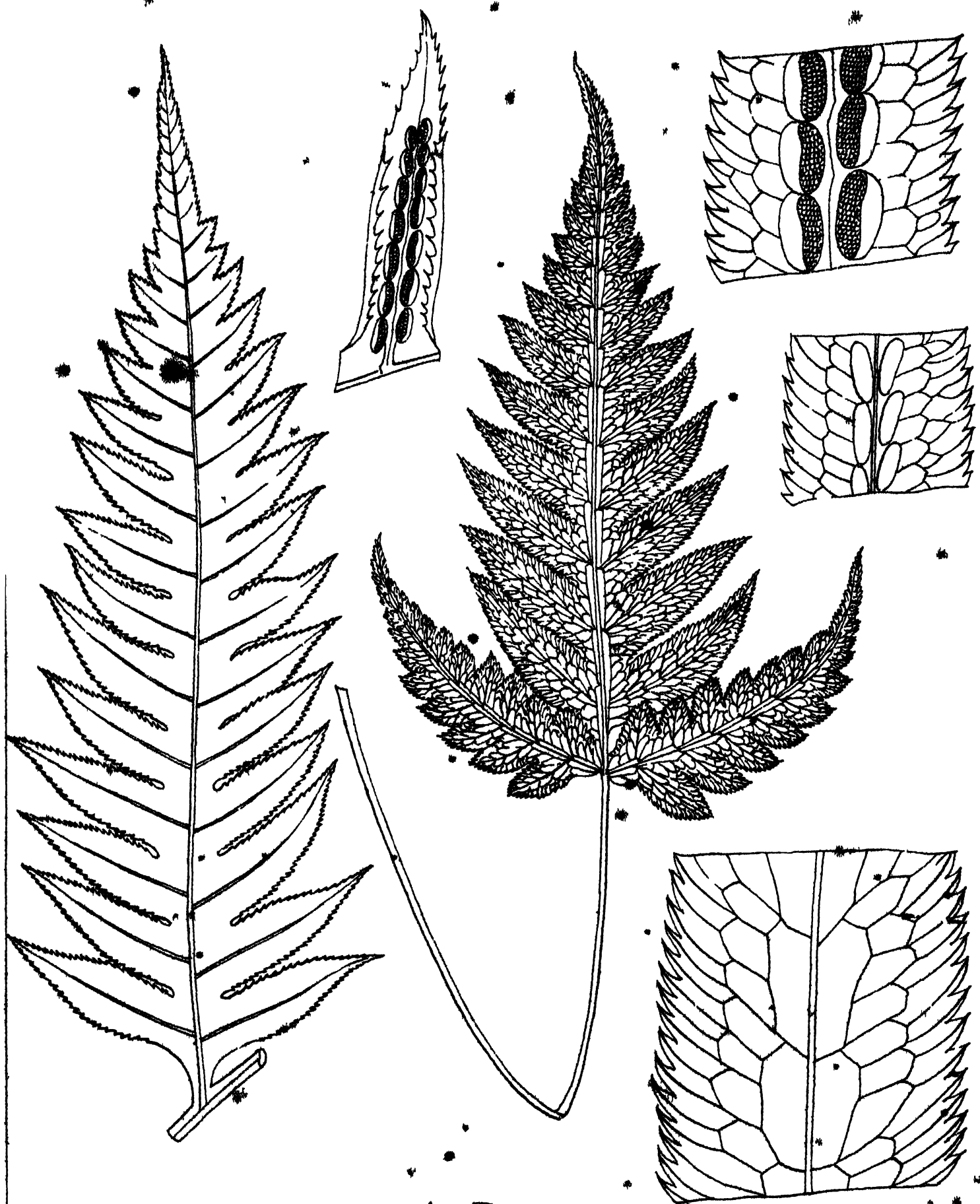
Caudex or rhizome very long and thick decumbent scaly copiously rooting. Stipites very paleaceous at the base with long subulate scales. Fronds pinnated or bipinnate. (Hooker)

**WOODWARDIA RADICANS** (Smith) Stipes elongate with large lanceolate acuminate palaceous scales at the base. Fronds amplipinnate subcoriaceous pinnæ distant often a foot or more long petiolate deeply pinnatifid broad lanceolate acuminate lacinae ovate lanceolate acuminate subulate spinulose serrate towards the apex veins reticulate towards the main costa (of the pinna) a single series of areoles outside of the sori thence free to the margin sori parallel with and near to the costule short oblong sunk in the cavity of the sori which has an elevated margin involucre vaulted coriaceous rich here and there producing large scaly germinating gemmae at the base of some of the pinna. *Hook Sp Fil* iii 66 *Smith At Faun v* p 412—*Schl Ind* p 104 t 112—(venal in very bad) *Siv Syn Fil* p 117 *Hol Gen Ind* t 17 —*Blechnum radicans* *Linn Mant* p 307 —*Woodwardia stans* *Siv Syn Fil* p 117 *Schl* p 104 t 113 —*W auriculata* *Bl Fn Ind Ind* p 196

The specimen figured is from Dalhousie—(Col Dyas)

Hab Himalaya mountains, (alt 10000 feet) Java Madura, Cunary Islands Spain Portugal, Italy Sicily

PLATE No LXXXVIII



*Woodwardia radicans*  
(Sm) \*







## PLATE I

## PTERIS (See Ferns of Southern India p. 11)

**PTERIS HETEROMORPHA** (Fie) 1½ 2 feet high erect firm caudex scarcely any root wiry caespitose frond 1½ foot high bristly lanceolate subcoriaceous remotely pinnate pinnæ usually opposite 4-6 pairs sessile linear lanceolate elongated acuminate 3 to 5 or 6 inches long entire at the margin or subsinuato crenate serrated only at the apex simple (undivided) or here and there with only a single or two horizontal lobes or ears near the base (rarely above the base) at other times the upper pinnæ are sparsely lobed and the lower ones gradually more so the lowest ones pinnatifid in their lower half with 4-6 oblong-lanceolate lobes on each side spreading horizontally (almost pectinate) veins approximate simple or once forked veinlets reaching to the margin sori continuous but not extending to the apex involucre marginal membranaceous narrow stipites short in proportion to the length of the fronds and rachises slightly rough to the touch bright tawny glossy *Hook Sp Fil* n 166 —It heteromorpha *Fee Ccn Fil* p 125 127, —Pt propinqua *J Sm En Fil Philipp in Hook Journ of Bot III 1 10* (not a figure and name only)

The specimen figured is from Birmah

Hab Birmah Luzon

## PLATE XXXIX







## PLANTYLOMFI

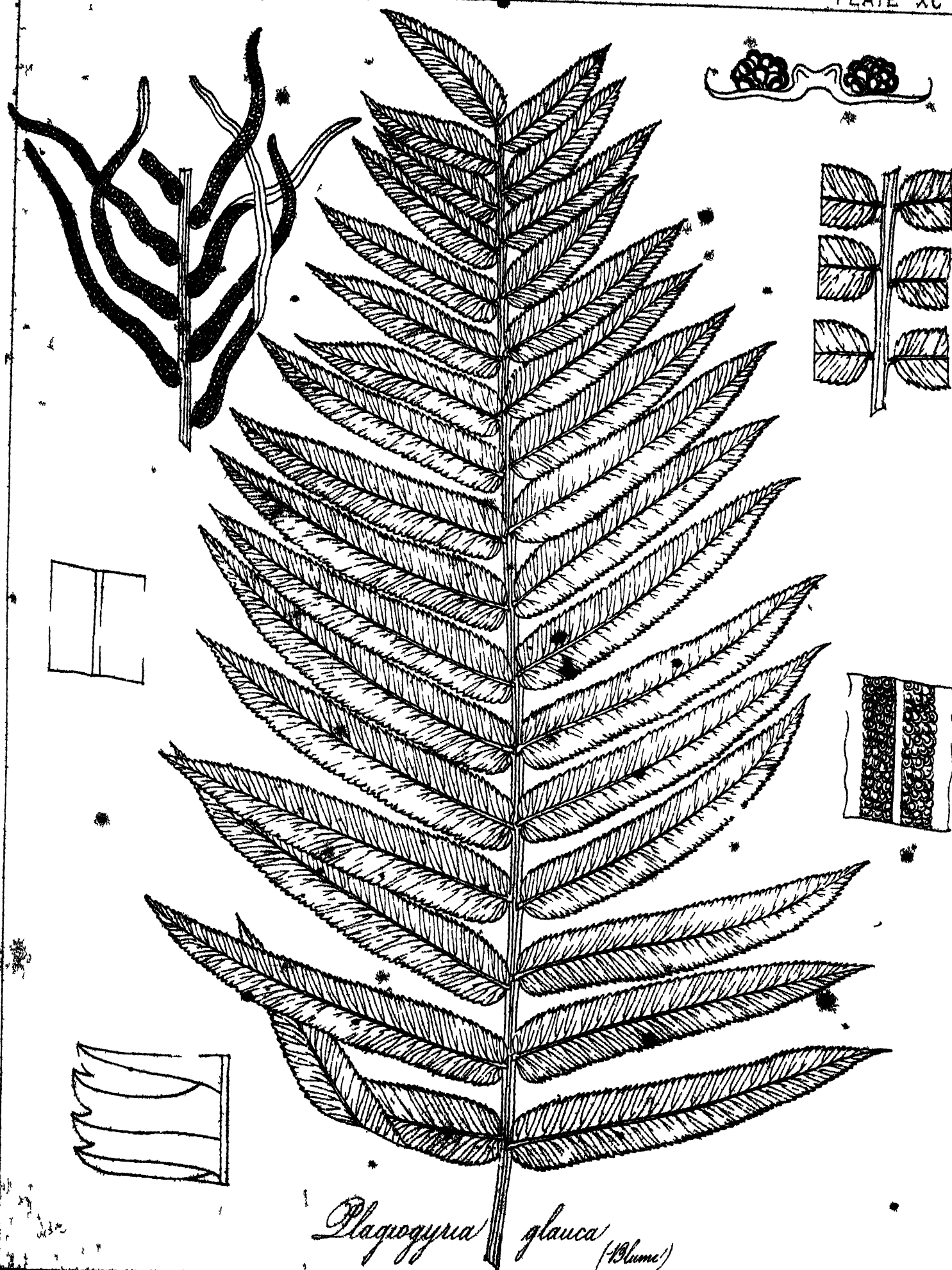
## PLAGIOGYRIA (See page 51)

**PLAGIOGYRIA GLAUCA** (Bl.) Cudex? stipites elongate subcompressa fruticulosus with two furrows in front the base dilated imbricatus on the anterior face bearing spongy depressed glands frond ovato oblong 12 foot long pinnated *fertile* pinnae numerous 3 inches long chartaceous horizontally spreading sessile or very nervly so lanceolate acuminate at the base truncated beneath having a gland is much attached to the rachis as to the very short petiole the margins finely dentate serrulate rather more strongly at the apex white and almost powdery beneath green above with a tinge of red veins copious compact simple and forked ultimate lobes pinnae confluent into a pinnatifid and lobed caudate apex *fertile* pinnae narrow linear obtuse erecto patent on very short petioles which is sometimes bearing a gland beneath sori and involucres as in other *Plagiogyria* Lomaria (*Plagiogyria*) *glauca* Hook. & G. *Fil.* in *L. B. P.* *Fil.* p. 204 *Ke in Bot Zeit* viii p. 143 in *Schub. Fil. Suppl.* ii 21 t. 138 — *Plagiogyria glauca* Metten *Planta* p. 19

The specimen figured is from the Khasia Hills—(Calcutta Herbarium)

Hab. Khasia Hills Jiva

PLATE No. XC









## CYSTOPTERIDÆ

CYSTOPTERIS Bernhardi Schrad Neues Journ Bot 1 Part 11 p 26 t 2 f 9

(Cystopteris Smith — Cyclopteris Gray — Aspidium Sp. Pl. — Polypodium Sp. Auct. — Cyathea Sp. Auct. — Nephrodium Sp., Auct. Athyrium Sp. Pl. t.)

Sori indusate the *receptacles* median *Indusium* roundish ovate firmate or sub hemispherical adnate by its broad base the lobes often lacerate sometimes acuminate *Veins* simple forked bipinnate from a central costa *venules* free

Fronds membranaceous herbaceous bipinnate Rhizome tufted decumbent or elongated and creeping (Moore)

CYSTOPTERIS FRAGILIS (Lam.) Fronds broad linearolate bipinnate pinnules ovate or linearolate variously toothed or acuminate or pinnatifid the segments more or less acute entire or again toothed Sori scattered more or less distant sometimes crowded and almost confluent rachis winged Hook. Sp. Fil. 1 197 Bernh. Verh. Journ. Bot. 1 1 24 — Polypodium, L. — Aspidium Willd. Sp. Pl. v p 280 — Cyathea Orientalis Desf.

The specimen figured is from Nepal

Hab. Himalayas Simla Nepal Punjab Great Britain and throughout Europe Siberia Asia Minor Persia North and South America, Madeira West Indies, North and South Africa

PLATE No. XC1



*Cystopteris fragilis*  
(L.) Link.





## ACROPHORUS (See ' Ferns of Southern India p 3)

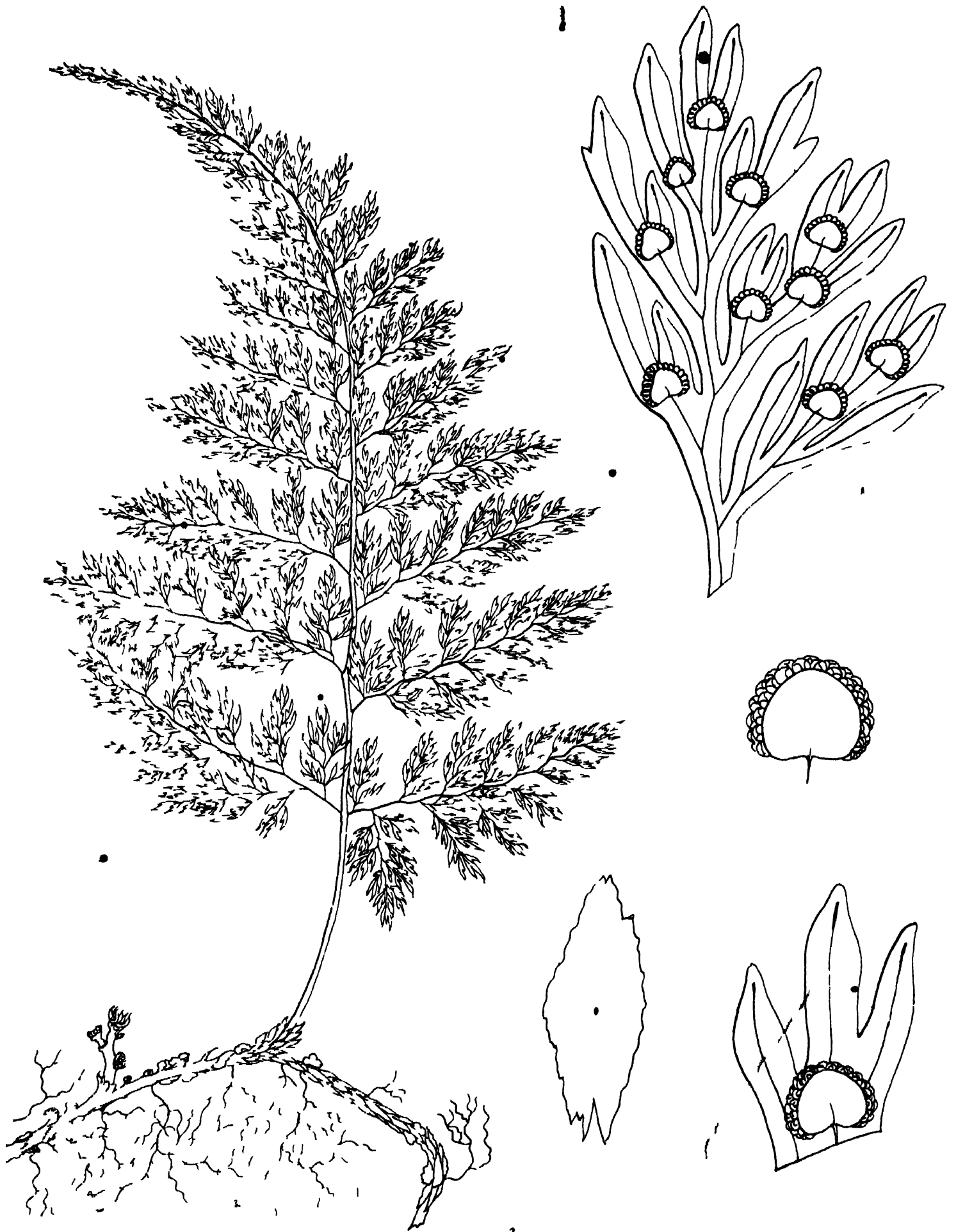
**ACROPHORUS PSEUDOCYSTOPTERIS** (Kze) Caudex creeping covered with peltate imbricated jagged scales fronds ovate membranaceous supra decomposed primary pinnae petiolate ovate lanceolate secondary petiolate ovate oblong pinnules deeply pinnatifid the segments very narrow linear acuminate entire or bifid sori medial on the segments, indusium small sub reniform, veins terminating within the margin

This species somewhat resembles *A. affinis* but the pinnules are more finely cut and the caudex is quite different

The specimen figured is from Dalhousie—(Colonel Dyas)

Hab Himalayas

PLATE No XCII



*Neuridium pseudo-cyrtosiphium*  
(Fr.)







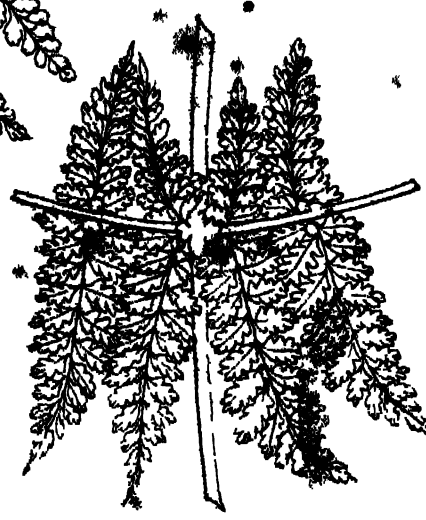
## ACROPHORUS

**ACROPHORUS NODOSUS** (Liesl.) Frond tripinnate membranaceous furfuraceous on both sides of the veins pinnules sessile (chaffy beneath at their insertions) oblong lanceolate secondary ones sessile oblong obtuse pinnatifid segments cuneiform obtuse lowest ones inciso serrate or at the base again sub auriculate solitary sub marginal rachis nodose above at the insertion of the pinnae and ferrugineo tomentose stipes slightly rough or glabrous paleaceous below *Hook Sp Fil* 1 157 — *Aspidium nodosum*, *Bl En Fil Jav* p 171 — *Acrophorus nodosus* *P* *Aspidium* ? foliolosum *Wall Cat* 359 — *Davallia stipellata* *Wall Cat* 260 ! *Monochosorum davallioides*, *Kze Bot Zeit* vi 119 — ? *Anogramma davallioides* *Fee Gen Fil* 164

The specimen figured is from the Khasya Hills—(Dr Thomson)

Hab Khasya, Assam, Sikkim Bhotan, Java, Moluccas

PLATE No XCIII



*Scrophularia nodosa*





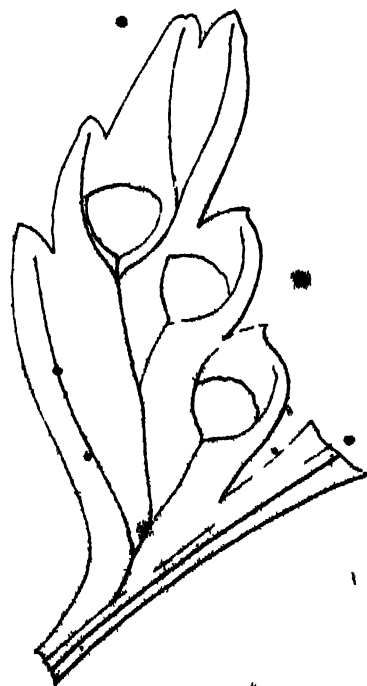
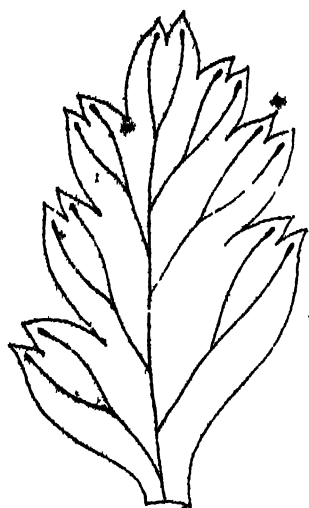
## ACROPHORUS

**ACROPHORUS ASSAMICUS** (Bedd.) Caudex creeping covered with numerous imbricated chaffy golden scales fronds glabrous shining 8 14 inches long (including the stipes which is 2 to 3 inches) 2 to 3 inches broad coriaceous membranaceous lanceolate pinnate with the primary pinnae alternate or opposite pinnatifid almost to the rachis lower ones petiolate upper ones decurrent so as to form a regular wing to the rachis pinnules pinnatifid segments toothed each bearing one sorus veins terminating within the margin involucre as in the genus

The specimens figured are from Assam—(Dr. Thomson) and are marked by Mr. Moore—' *New species near membranulosus*

Herb. Assam

PLATE No. XCIV



*Acrophorus Assamicus*  
(Hedl.)







## ACROPHORUS

**ACROPHORUS HOOKERI** (Moore) Fronds ovate or oblongo ovate glabrous membranaceous 6 10 inches long by 4 5 inches broad tripinnate secondary and tertiary rachides much flattened being composed as it were of the decurrent base of the pinnae or pinnules pinnules linear obtuse entire or bifid veins simple or forked and terminating considerably within the margin sori one to each pinnule situated at the forking of the vein indusium as in the genus

A delicate finely cut species with much the appearance of *Asplen tenuifolium* easier understood from the figure than by any description

The specimen figured is from the Khasya Hills (Dr Thomson)

Hab Khasya, Serimur Sikkim

PLATE NO. 105







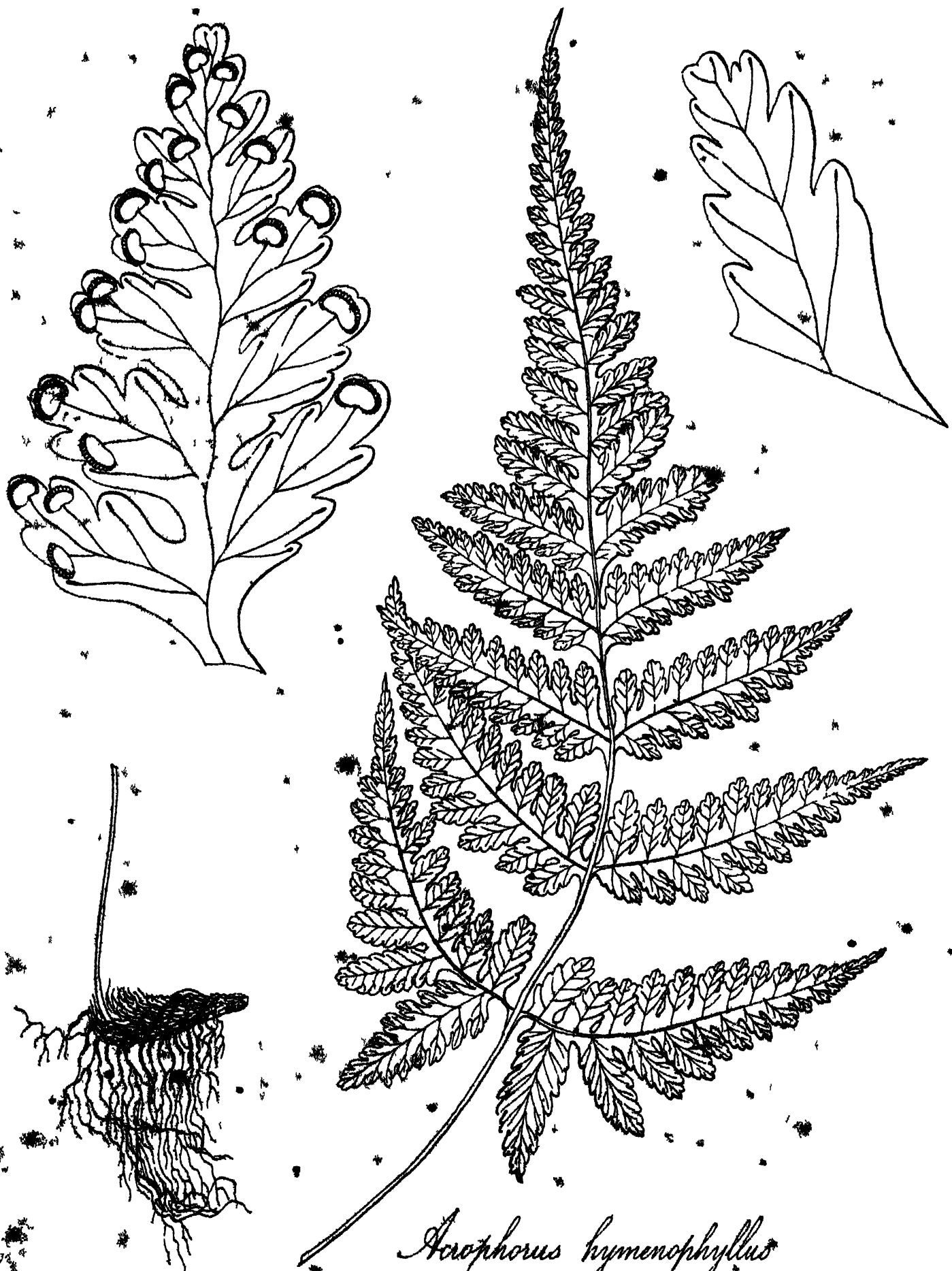
## ACROPHORUS

**ACROPHORUS HYMENOPHYLLUS** (Parish) Caudex creeping furnished with numerous long wiry roots—fronds subglabrous membranaceous very flaccid and transparent ovate or deltoid ovate pinnate lower pinnæ deeply pinnatifid with the lower basal segments much the largest and again pinnatifid with the segments entire or crenated the remaining pinnæ pinnatifid with the segments crenated Sori at the apex of the superior veinlets of each segment indusium as in the genus veins terminating within the margin

This very delicate species was discovered near Moulmein by the Rev. Parish to whom I am indebted for the specimen figured.

II 1b Moulmein

PLATE No. LCVI



*Acrophorus hymenophyllus*  
(Pursh)







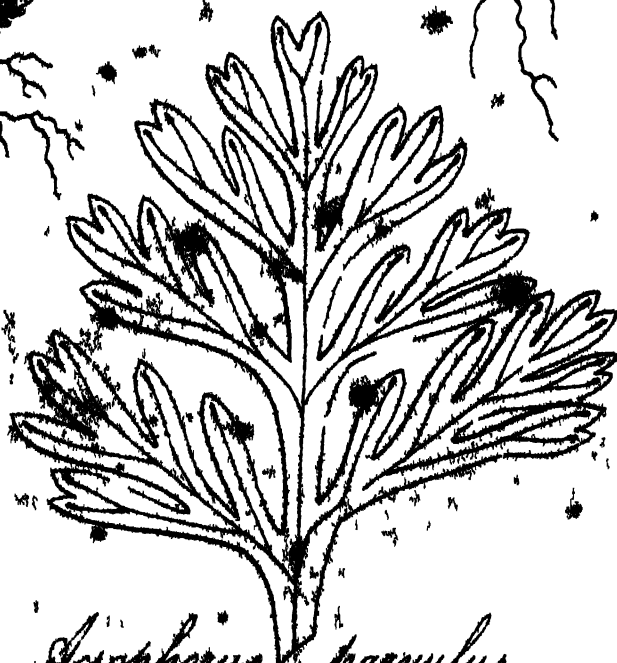
## ACROPHORUS

**ACROPHORUS PARVULUS** (Wall) Caudex long creeping clothed with lax subulate scales, frond very small deltoid tripinnatifid glabrous rigid (from the stout costa) segments linear throughout slightly grooved above when dry unequally forked and acute at the apices sori at the sinus of the forks involucre suborbicular dilated above and broader than the segments *Hook Sp Fil* 1 160 *Wall Cat n* 247 *Hook Et Grev Ic Fil f* 138,—*Leucostegia*, *J Sm*

The specimen figured is from the Calcutta Herbarium, but unfortunately not in fructification

Hab Singapore, Borneo, Java

PLATE No XCVII



*Acrophorus parvulus*  
(Hall)





## ACROPHORUS

**ACROPHORUS MEMBRANULOSUS** (Wall.) Caudex hispid with very long slender subulate rigid membranaceous scales, frond small very thin and membranaceous ovato lanceolate and as well as the slender stipes and rachis pubescenti hirsute bipinnate pinnae alternate lanceolate their rachis winged pinnules lanceolate pinnatifid the segments ovato lanceolate subfalcate very acute entire or rarely toothed involucres small ovato subrotund acute very thin and membranaceous fixed by the broad base, the rest free *Hook* *Syl. Fil.* 1: 159 *Wall. Cat.* n. 250

\* The figure is taken from Sir W. Hooker's *Species Filicum*

Hab. Nepal

PLATE No. XCVIII



*Acrostichum membranulosus*  
(Willd.)







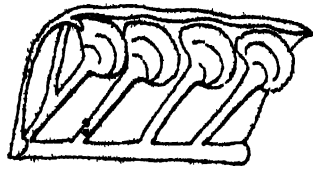
HUMATA (See Ferns of Southern India, p 4)

**HUMATA PARALLELA** (Wall) Caudex creeping, paleaceous fronds stipitate coriaceous ovate lanceolate acuminate deeply pinnatifid nearly to the rachis segments close parallel horizontally patent linear or linear oblong subfalcate entire the lowermost pair sometimes with a solitary obtuse lobe at the base beneath rarely more involucres semiorbicular copious marginal but all pointing towards the apex of the segments in two close parallel lines (not pointing towards the margins) veins thickened sunk *Hook Sp Pl* 1 153 *Wall Cat n* 251,—*Nephrodium Gaimardianum* *Gaud in Freyc Voy Bot t* 12 f 1

• The specimen figured is from Birmah—(Parish)

Hab Singapore Birmah, Moluccas Sandwich Islands Luzon

PLATE No XCIX .



*Humata parallela*  
(Hall.)





## HUMATA

**HUMATA HETEROPHYLLA** (Sm) Caudex long creeping scaly and lispid with the long reflexed points of the scales, fronds coriaceous, stipitate arising from a scaly bulb sterile ones oblong or ovato lanceolate acuminate entire often walled, fertiles ones linear lanceolate acuminate deeply sinuato pinnatifid the lobes horizontal crenate involucre reniform copious on the crenatures of the lobes *Hook Sp Fl* 1 152 *Sm Act Taur* v p 41 *Willd Sp Pl* v p 565 *Sw Syn Fl* p 130 and 337 *Hook et Grev Ic Fl* p 230 —*Humata ophioglossa*, *Cav Præl* 1801 n 678, —*Davallia pinnatifida*, *Sw Syn Fl* p 130 *Willd Sp Pl* v p 465, —*Humata pinnatifida* " *Cav Præl* 1801 n 679 —*Davallia lobulosa*, *Wall Cat* n 241

The specimen figured is from Singapore

Hab Singapore Penang Malay Islands Java Isle Samar

PLATE No C



*Adiantum heterophyllum*  
(L.)







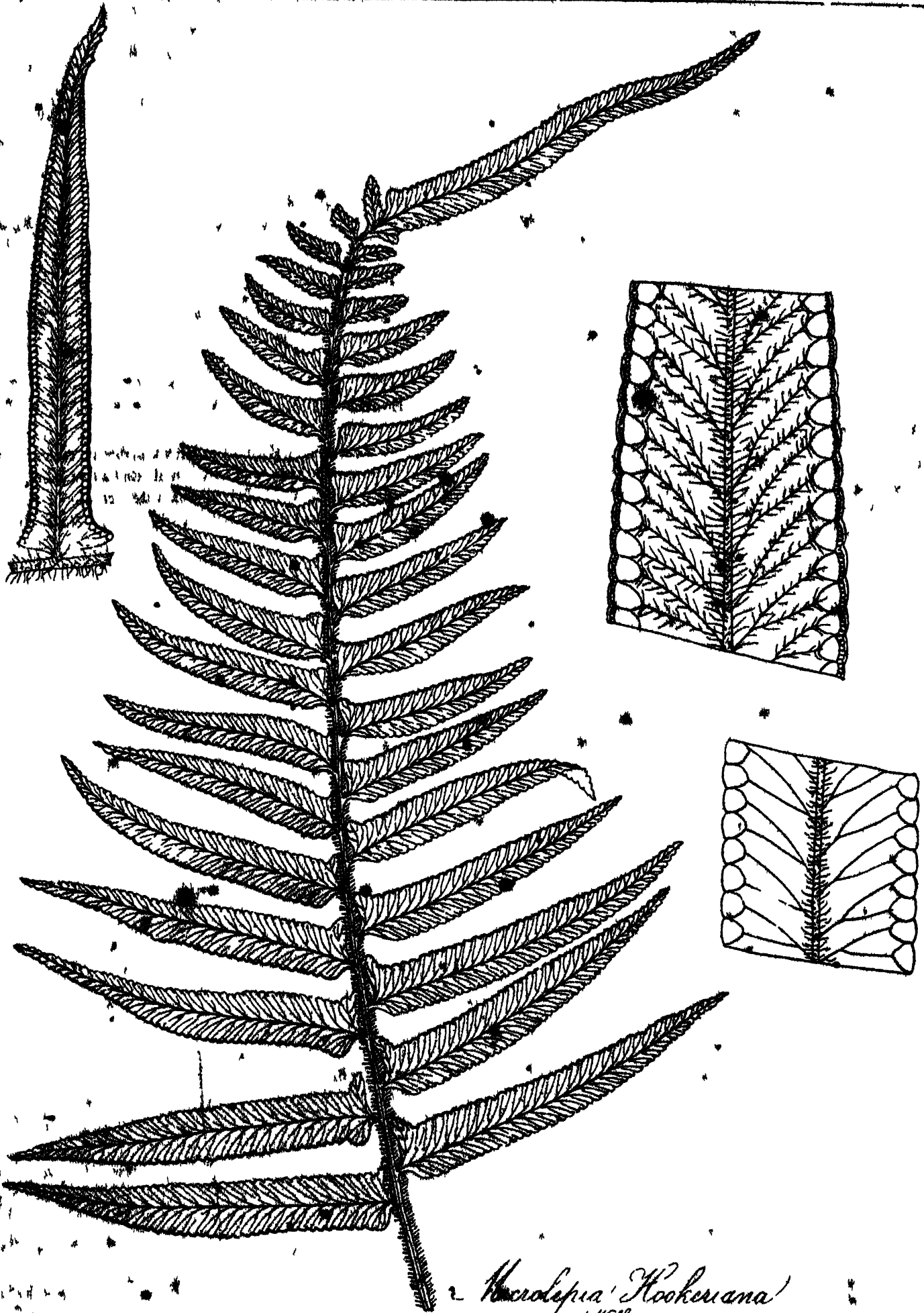
## MICROLEPIA (See "Ferns of Southern India" p 5)

**MICROLEPIA HOOKERIANA** (Wall) Stipes a foot and more long pubescent at length glabrous rachis hirsute-subescent, fronds lanceolate pinnate, pinnæ subpetiolate lanceolate from a broad hastate base, gradually acuminate submembranaceous, implicate crenated sparingly hairy on the costa and veins beneath veins parallel dichotomous sori approximate, forming a continued line at the base of the crenatures of the margin, involucres half cup shaped stipes and rachis pubescent; hirsute. *Hook Sp Fl.* 172 *Wall Cat n* 2684

The specimen figured is from the Khasya Hills—(Dr Thomson)

Hab Khasya, Sylhet, Kumaon, Assam

PLATE No CI



*Macrolepua hookeriana*  
(Wall.)





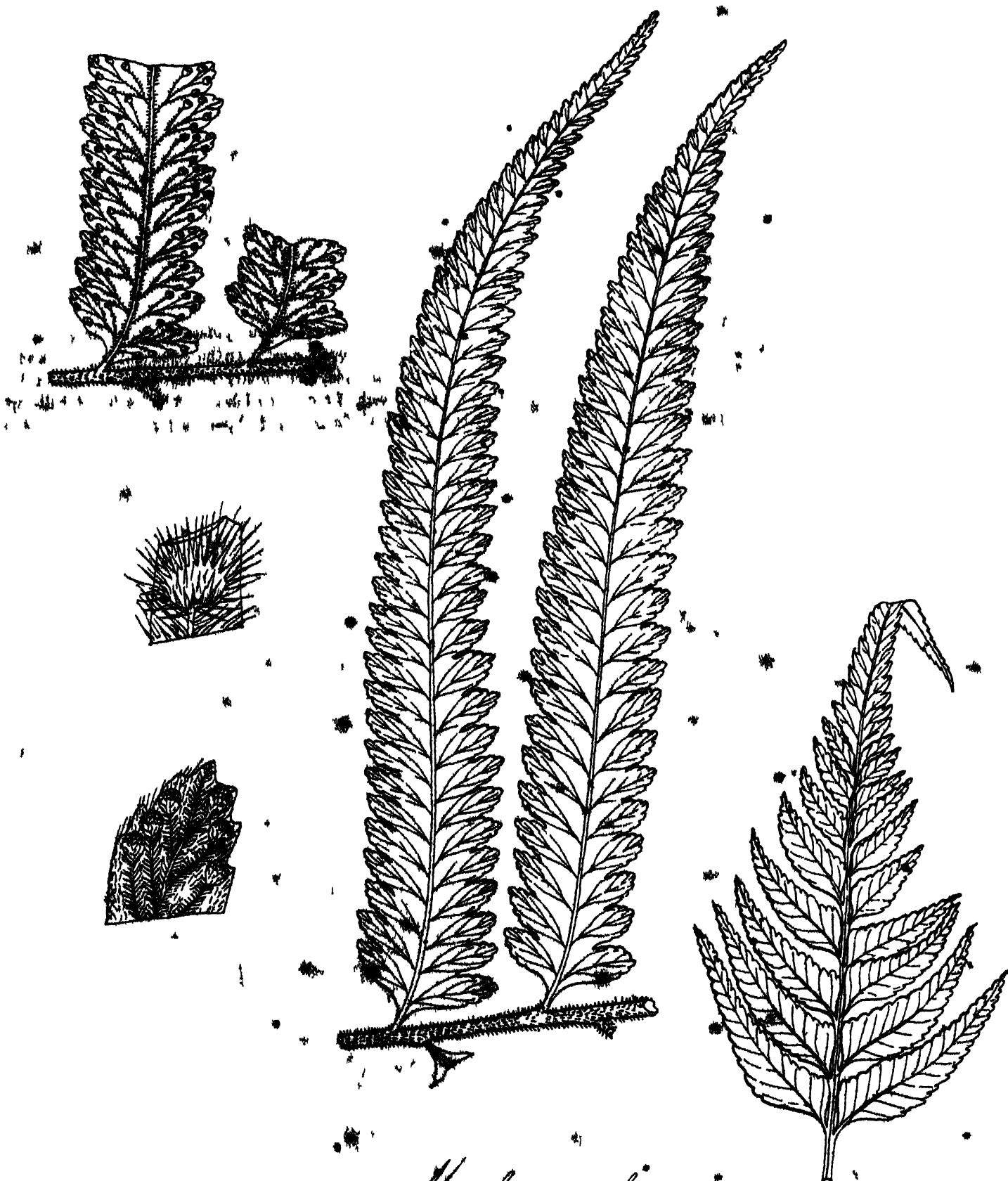
## MICROLEPIA

**MICROLEPIA SCABRA** (Don) Fronds broadly ovate lanceolate <sup>#</sup>firm membranaceous, pinnae elongate lanceolate sub falcate acuminate pinnatifido lobate the acuminate apices serrated pubescent villous beneath, most so on the costa and prominent veins unequally cuneate at the base and subpetiolate, lobes acute crenato dentate, veins pinnated, sori solitary in the axils of the smaller and upper lobes or serratures and distant from the margin, marginal on the small teeth of the larger lobes, involucre broad half cup-shaped, densely villous, rachis and stipes downy, the latter at length glabrous *Hook Sp Fil* : 172,—*Davallia villosa* *Wall. Cat* n. 244—(not Don)

The specimen figured is from the Khasya Hills—(Dr Thomson)

Hab Himalayas, Nepal

PLATE No CII



*Microlepia scabra*  
(Dm.)







## MICROLEPIA

**MICROLEPIA UROPHYLLA** (Wall) Fronds (tufted?) tall lanceolate firm membranaceous, pinnæ elongate lanceolate subfalcate acuminate pinnatifido lobate, the apices serrated, everywhere glabrous except the costa beneath which is pubescent unequally cuneate at the base and distinctly petiolate, lobes acute crenato dentate veins pinnated sori along the toothed margin of the lobes involucre shallow, half cup shaped glabrous or ciliate rachis and stipes slightly downy the latter at length glabrous —*Davallia calvescens* Wall Cat n 2983 Hook Sp Fil 1 172 —*Davallia urophylla* Wall Cat n 2683

The specimen figured is from the Khasya Hills—(Dr Thomson)

Hab Khasya, Kumaon

PLATE No CIII



*Microlepia prophylla* (Hall)





## DAVALLIA (See "Ferns of Southern India," p 5)

**DAVALLIA SOLIDA** (Sw) Tall, caudex stout creeping clothed with densely imbricated scales fronds coriaceous tri sub quadri pinnate pinnæ acuminate, pinnules trapeziform acuminate pinnatifid many veined terminal ones erenato serrate condunate into an acuminate point involucre linear oblong sunk in a tooth or segment having a narrow wing on each side or entire *Hook Sp Fil* t 163 *Sw Syn Fil* p 132 and 345 *Willd Sp Pl* v p 470 *Schkk Fil* t 126 — 'D procera *Hedw Fil Fasc* iv tab (in desc: elegans) *fide Sw* ——— variety  $\beta$  *latifolia* pinnules wider soriferous segments entire (without terminal teeth), —D ornata, *Wall Cat* n 246 —Stenolobus ornatus *Pr* (name only) ——— variety  $\gamma$  *caudata* pinnæ narrower, apices of the pinnules long caudate involucre with a small incurved terminal tooth on one or both sides, sometimes entire *D caudata Wall Cat* n 2220 and *Sw* ? —Stenolobus Kunzeanus *Pr Tent Pterid* p 130 t 4 f 30 (name and figure only) — D elegans, *hæc herb nec Swart* (*Pr*) —D solida, *Bl En Fil Jav* p 234 —Trichomanes solidum *Forster Prodr* n 475

The specimen figured is from Moulmein—(Parish)

Hab Pacific Islands Otaheite New Islands Pitcairns Island Morden Island Java Moulmein, Penang Singapore  
Luzon Island of Vanicoro

PLATE No CIV



*Davallia solida* (Wh.)







## DAVALLIA

**DAVALLIA TRIPHYLLA** (Hook.) Caudex stout creeping covered with chaffy scales fronds coriaceous small ternate, pinnæ oblong lanceolate, obtuse emarginate at the base, in fertile plants more elongated, all of them entire intermediate ones petiolate, lateral ones shorter sessile oblique at the base veins horizontally patent copious crowded parallel forked thickened flat (not prominent) involucre semicylindrical compressed crowded so as to form an uninterrupted marginal line the whole length of the pinnæ  
*Hook. Sj. Fl.* 162 —*Stenolobus pentaphyllus J. Sm. En. Fl. Phillip. l. c.* —(not *Davallia pentaphylla Bl.*)

• Hab. Singapore

• LATE No CV







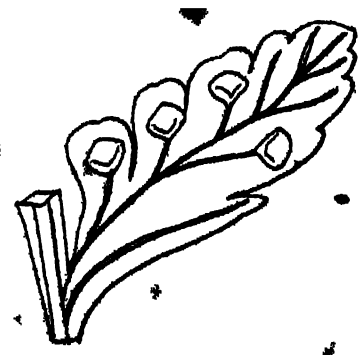
## DAVALLIA

**DAVALLIA GRIFFITHIANA** (Hook) Caudex long stout creeping clothed with copious pale coloured shaggy fimbriate pilose scales frond deltoideo ovate sub coriaceous tripinnate pinnæ acuminate pinnules oblong lanceolate petiolulate obtuse, obliquely cuncate at the base pinnatifid lower ones again pinnate lobes short obtuse or retuse almost obsolete on the lower margin, involucre flat orbiculate, the upper half free placed at a distance from the apex of the lobules and chiefly upon those of the superior margin rachides (except the primary ones) winged stipes elongated — $\beta$  more coriaceous with a faint appearance of stræ or pseudo veins —*Hook Sp Fil* 1 168

The figure is taken from Sir W Hooker's Species Filicum

Hab Khasya, Assam

PLATE No CVI



*Davallia Griffithiana*  
(Hook.)







## DAVALLIA

**DAVALLIA POLYANTHA** (Hook) Tall coriaceous, frond 3 4 pinnate pinnæ distant, ovato-lanceolate acuminate, lower pinnules deeply pinnatifid almost to the rachis petiolate upper ones and the segments of the pinnules oblong rather acute, ultimate ones decurrent, so as to form a winged rachis all of them crenato serrate veins pinnated no strise, each lobule bearing an oval truncated involucre rather considerably below the apex with a very short erect tooth on the outside (often obsolete) —*Hook Sp Fil* 1 168

The figure is taken from Sir W Hooker's Species Filicum

Hab, Singapore

PLATE No CVII



*Adiantum polyantha*





## POLYPODINEÆ

B Receptacles effuse occupying a crowded mass of reticulated veinlets forming large amorphous portions or separate lobes of the fronds or sometimes definite in form **PLATYCERIEÆ**

**PLATYCERIUM, (Desvaux Ann Soc Lin Par vi 213)**

(*Neuroplatyceros Plukenet Fee* — *Alucornium Gaudichaud* — *Scutigera, Fee* — *Platyceria, Fee* — *Acrostichum Sp, Auct*)

*Sori* superficial, non ndusiate, the *receptacles* (a series of crowded anastomosing veins), occupying the under-surface of separate lobes or large amorphous portions of the fertile fronds *Veins* furcate, free, or here and there anastomosing, *venules* anastomosing in large trapezoid or sub hexagonal elongated areoles, the veinlets free, divaricate or hamate within the areoles

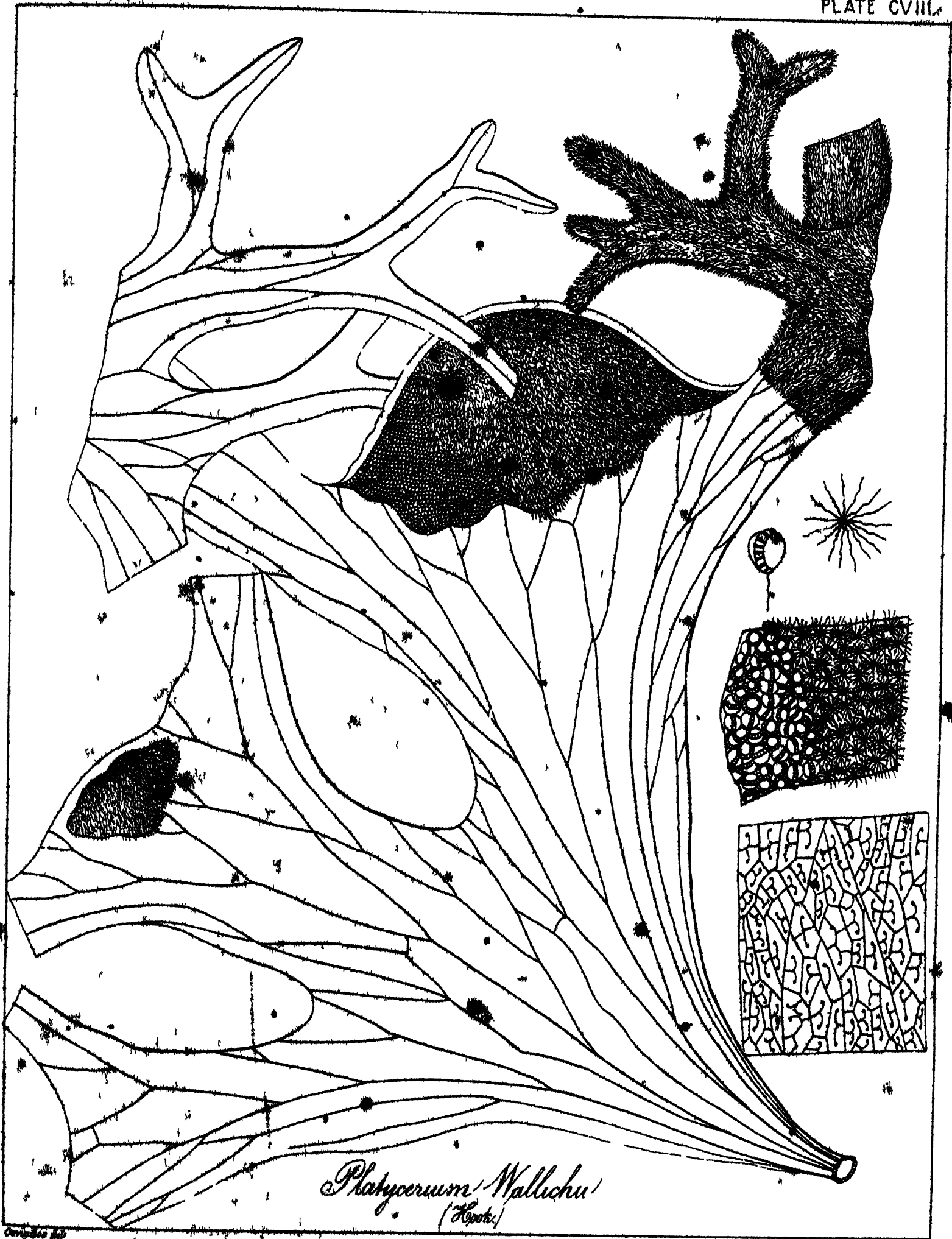
Fronds heteromorphous, coriaceous lacinate or lobate clothed with stellate hairs the fertile ones articulate Rhizome sub globose A very distinct group \*The primary veins rarely unite while the secondary ones are compoundly anastomosed — (Moore)

**PLATYCERIUM WALLICHII** (Hook) Fronds ample bifarious, at length glabrous, sterile ones imbricated below irregularly sinuato lobate above elongated dilated deeply and much dichotomously pinnatifid Segments patent inflexed *fertile* fronds geminate very broadly flabellate ouneate twice—dichotomous suddenly narrowed at the base each primary division or segment bears a sorus on the disk (hence there are two sori on each frond), which is semi circular and very much produced in the sinus itself the terminal segments beyond the soriferous disk are several times dichotomous and pendent, primary veins dichotomous, parallel elevated here and there anastomosing into broad elongated areoles which are occupied by lesser ones with numerous free branched included veinlets — *Hook Sp Fil v 284* — *Hook in Gard Chron for Oct 1858 p 765 and in Bot Exot t 97* — *Acrostichum alucorne Wall Cat n 19 (not Linn)*

The specimen figured is from Moulmein—(Irish)

Hab Moulmein banks of Irawaddy, and river Martaban Malay, Peninsula

PLATE No. CVIII



*Platyserium Wallichii*  
(Hook.)







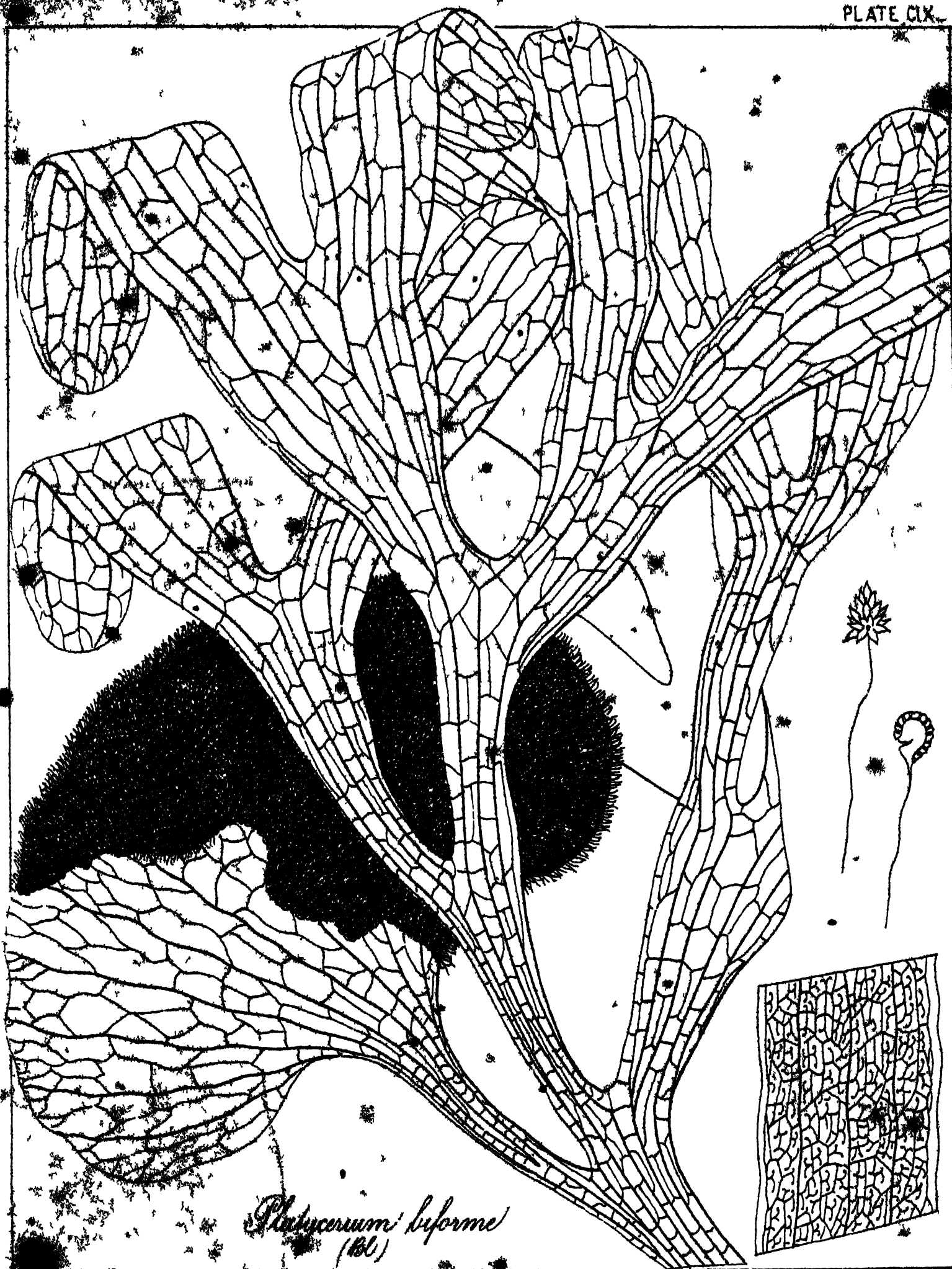
## PLATYCERIUM

**PLATYCERIUM BIFORME** (Bl) Fronds ample bifarious at length glabrous *sterile* ones imbricated very thick and corky towards the base subrotund but very varied in circumscription lobed and sinuated at the margin, coarsely reticulato venose *fertile* fronds (geminat?) rather long—stipitate of great size 5 6 and more feet long!—from a subcuneate base repeatedly dichotomous the segments loriform flaccid and pendent fertile segments quite different from the rest forming a large reniform stipitate shield like receptacle 6 8 inches or more in diameter wholly soriferous beneath except at the margin—*Hook Sp Fl v 285 Bl Fl Jav p 14 t 18 Pl J Sm Hook in Gard Chron for 1858, p 764* —*Neuroplatyceros Fee Acrost p 104*, —*Acrostichum, Sw Syn Fl p 112, Willd Sp Pl v p 111* —A fuciforme, *Wall Cat n 20* —*Platycerium coronarium, Desf*

The specimen figured is from Java (Calcutta Herb)

**Hab** Burmah, Mergui, Singapore Malay Peninsula and Islands Java, Borneo, Philippine Islands

PLATE No CIX



*Platycerium bifurcatum*  
(Bl.)





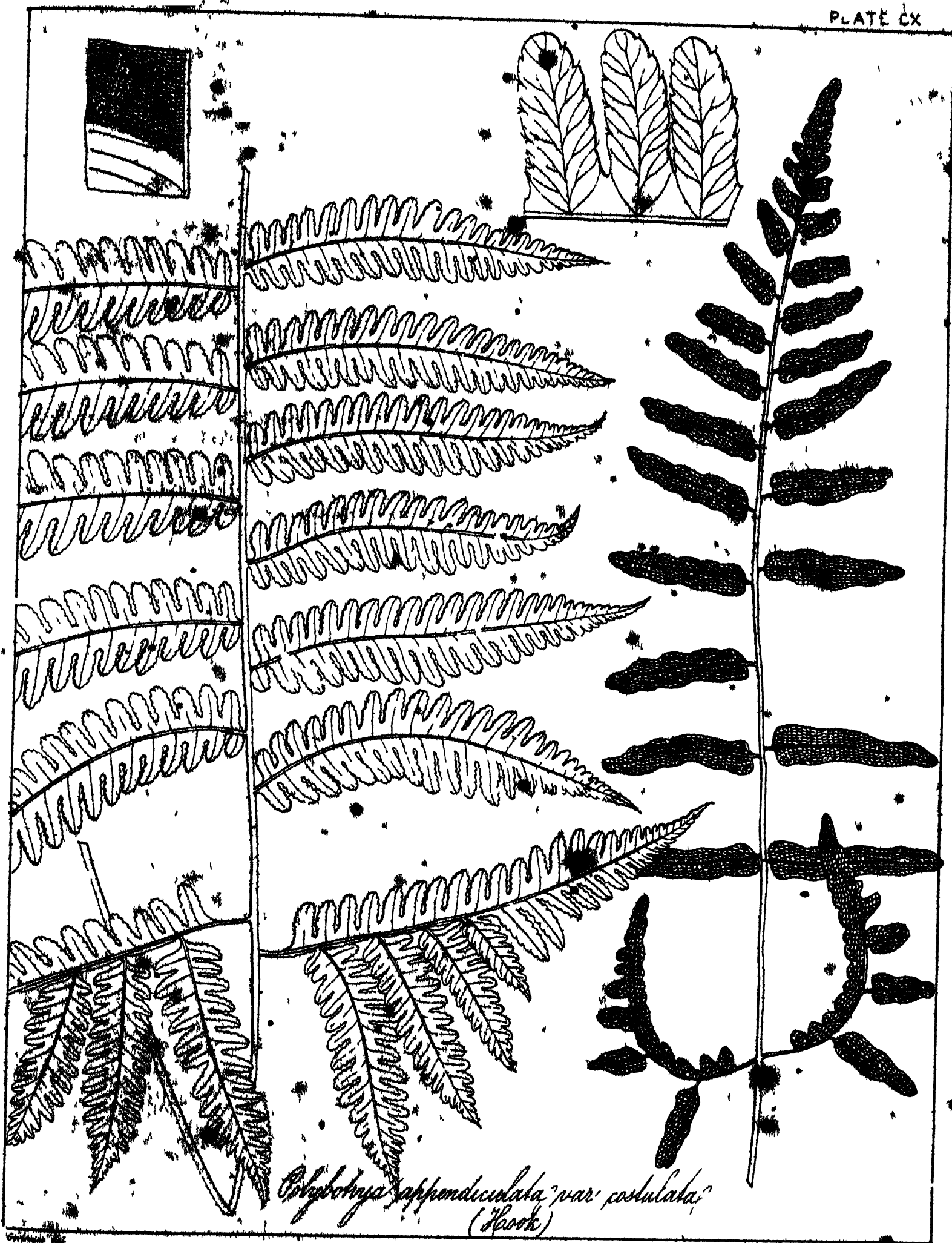
## POLYBOTRYA (See "Ferns of Southern India" p 66)

**POLYBOTRYA APPENDICULATA** *var. "  $\beta$  costulata* (Hook.) Sterile pinnae deeply pinnatifid  $\frac{1}{2}$   $\frac{3}{4}$  of the way to the rachis costulate with simple patent veins lowest pair of pinnae half deltoid, bipinnate at the base, pinnules  $1\frac{1}{2}$  to  $3\frac{1}{2}$  inches long deeply pinnatifid like the primary pinnae fertile pinnae also with the lower pair in like manner pinnated as in the sterile fronds —(*Hook*)

The specimen figured is from Moulmein from Mr Parish who informs me that he considers it quite distinct as a species from *B. appendiculata* of which however Sir W Hooker considers it a variety only—it is a beautifully delicate plant

Hab Moulmein

PLATE No CX







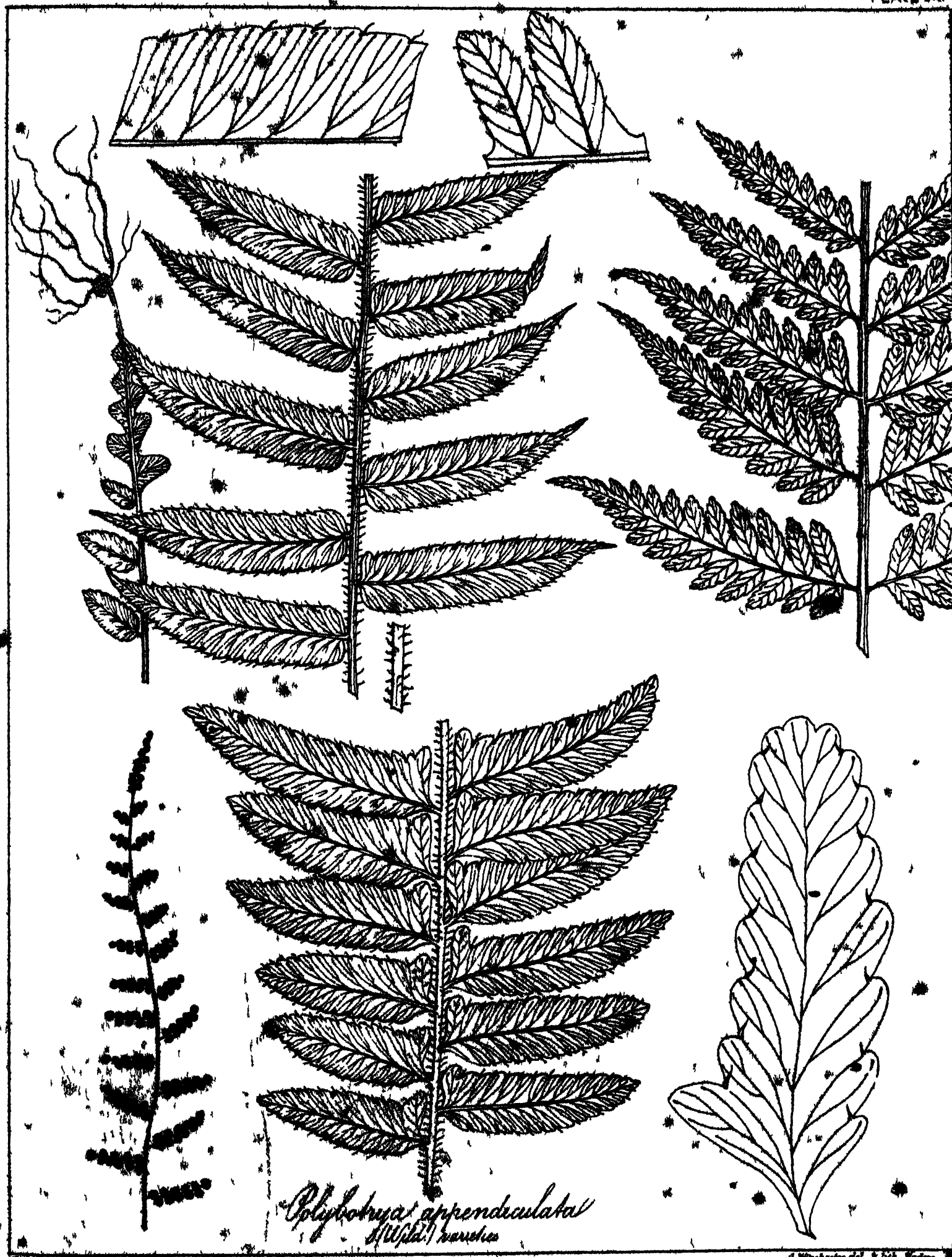


POLYBOTRYA

POLYBOTRYA APPENDICULATA (Wild) (See " Ferns of Southern India " p 66 )

The plate contains figures of 3 different varieties of this species, all received from Moulmein, from Mr Parish. The second supposed species common in India and published in Plate CXCIV of " The Ferns of Southern India " under the name of *P asplenifolia* (Bory) must, I am afraid, be looked upon only as a variety of *appendiculata*.

PLATE No CXI



*Polypodium appendiculatum*  
(Wpl.) Handr.





PÆCILOPTERIS (See "Ferns of Southern India," p 68)

**PÆCILOPTERIS FLAGELLIFERA** (Wall) Caudex creeping, paleaceous thick as a goose quill stipites a span to a foot and more long (longer of the fertile frond) scaly at the base fronds firm membranaceous a span to 1 2 feet long pinnate pinnæ commonly 3 5, rarely more *sterile* pinnæ 3 5 inches long 1½ 2 inches wide subelliptical or oblongo lanceolate lateral ones rather suddenly acuminate entire or sinuato crenate subcuneate at the base and petiolate terminal one similar to these but larger and petiolate or more generally very much elongate and caudate a foot or 1½ 2 feet long ! rooting and proliferous at the apex, venation manifest costules rather wide apart veins anastomosing always forming a series, of oblong large areoles close to the costa and costules, nearly uniform in size and shape the rest of the areoles very irregular and with or without free included simple veinlets *fertile* pinnæ much smaller 2 3 inches long, oblong obtuse occasionally the cauda of the terminal *sterile* pinnæ becomes fertile, and the lateral *sterile* pinnæ partially soriferous the capsules in that case chiefly confined to the costules and near to the margin—*Hook Sp Fil* v 258 —*Hook and Grev Ic Fil* t 23 *Bl Fil Jav* p 104 t 13 *Cyrtogonium J Sm* —A heterochitum *Pr* *Pæcilopteris Pr* —*Heteroneuron Fée Acrost* p 92 —*Acrostichum diversifolium Bl Fil Jav* p 36 t 12 ? (*sterile frond simple*)!—*Cyrtogonium J Sm* —*Heteroneuron Fée Acrost* p 91 (*excl syn* —*Gymnopteris trilobata J Sm* )—*Pæcilopteris, Pr Rheede Hort Malab x ii t ii*

The specimen figured is from Assam—(Dr Thomson)

Hab Nepal Assam Chittag ng Moulinein Java Luzon, Malabar (if Sir W Hooker is correct in referring Rheede Hort Malab xii t ii to this plant—but I have never detected it any where in Malabar)

PLATE No CXII



*Phacelium flagelliforme*  
(Willd.)

Illustration of the plant by John A. Smith







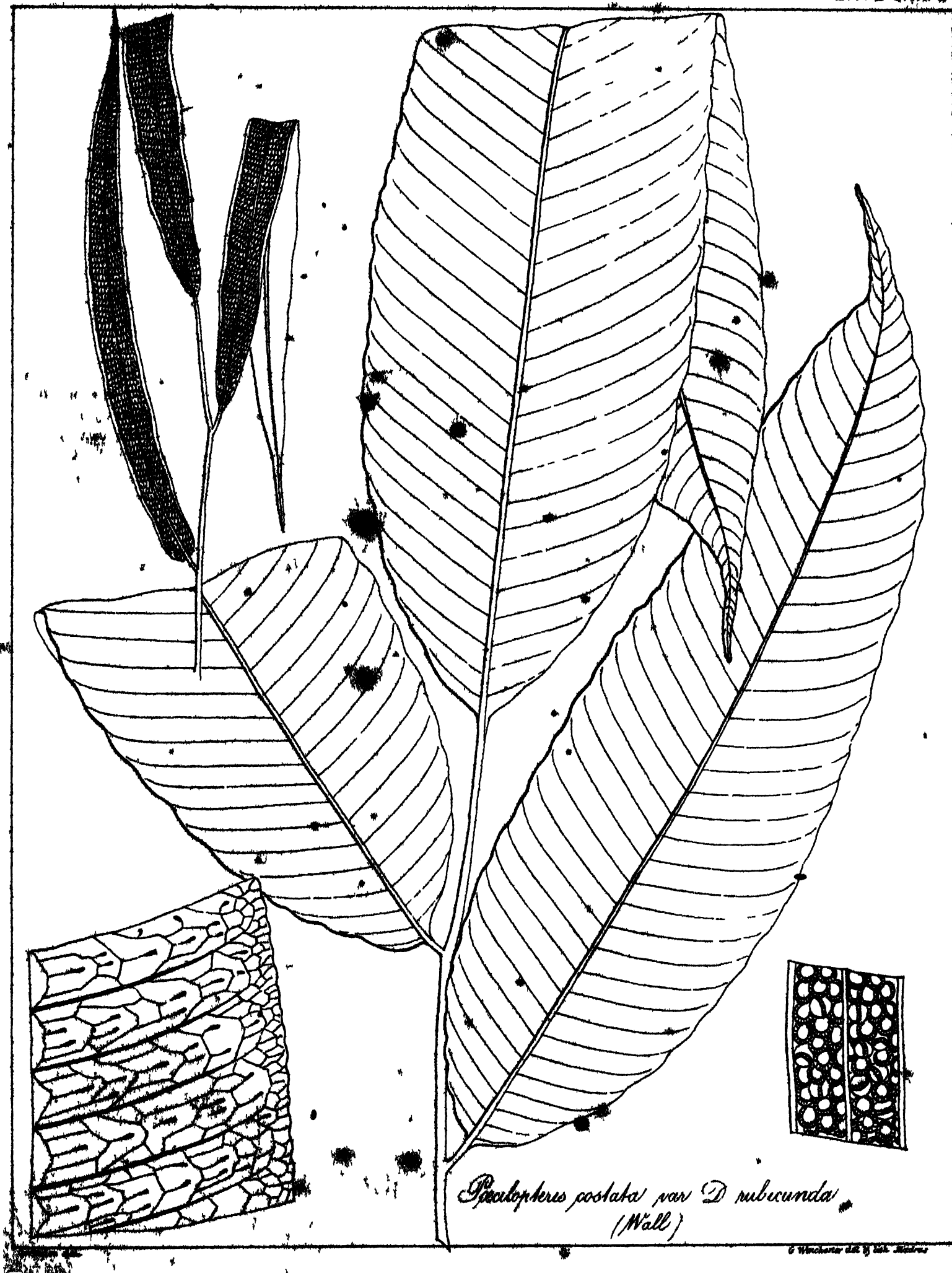
**PÆCIIPTERIS COSTATA** (Wall.) Caudex creeping, subulato paleaceous, stipites 1 1½ and more feet long, striated and often here and there rusty fuliginous fronds 1 1½ or more feet long coriaceous or subcoriaceous membranaceous, very pale-green pinnate; pinnæ petiolate of the *sterile* frond 7 10 inches long, 1 2 inches broad oblong, acuminate obtusely and obliquely cuneate at the base entire sinuato crenate at the margin costules horizontal and costa prominent beneath primary veins arched and forming three or four or more series (according to the breadth of the pinnæ) of very irregular but sub transverse large areoles within which are lesser deltoid areoles including two or more clavate free veinlets free veinlets also at the margin pinnæ of the *fertile* fronds generally smaller, 2 3 6 inches long more coriaceous but nearly of the same form wholly or partially soriferous, the margin sometimes reflexed, costules very distinct and prominent beneath venation less compound *Hook Sp Fil* v 262

Var *a rubicunda* pinnæ very large subcoriaceous often finely acuminate, 8 12 inches long frequently deeply tinged with purple-red wholly soriferous beneath fertile ones 6 9 inches long ½ an inch wide, — *A costatum*, *Wall Cat n. 26*, — *Cyrtogonium*, *J Sm*, — *Pœcilopteris*, *Moore* — *Campium P*

The specimen figured is from Assam—(Dr Thomson)

Hab Nepal, Sylhet, Assam, Khasya, Kumaon, and Chittagong

PLATE No CXIII







PÆCILOPTERIS

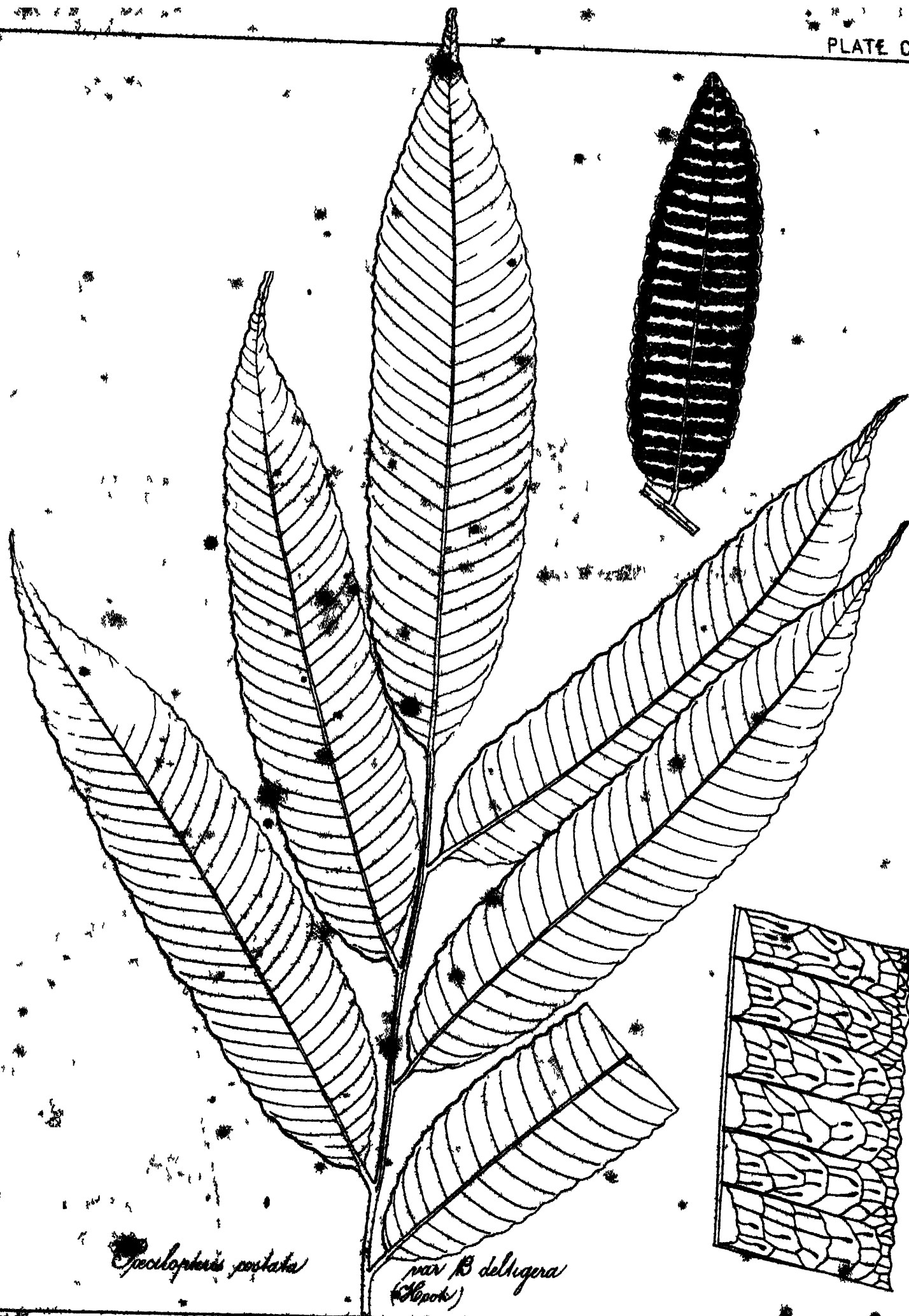
PÆCILOPTERIS COSTATA (See p 113 )

*Var* \* $\beta$ , DELTIGERUM small sori partial generally marginal and interrupted spots or masses forming transverse lines between the costules, frequently having a deltoid form. *Hook Sp Fvl* v 262 — *Meniscium deltigerum* *Wall Cat* n 59

The specimen figured is from Birmah—(Captain Dormer)

*Hab* Nepal, Bhotan, Sikkim, Birmah

PLATE No CXIV •



*Cyclopteris costata*

var. *B. deligera*  
(Hook.)







P E C H O P T R I S

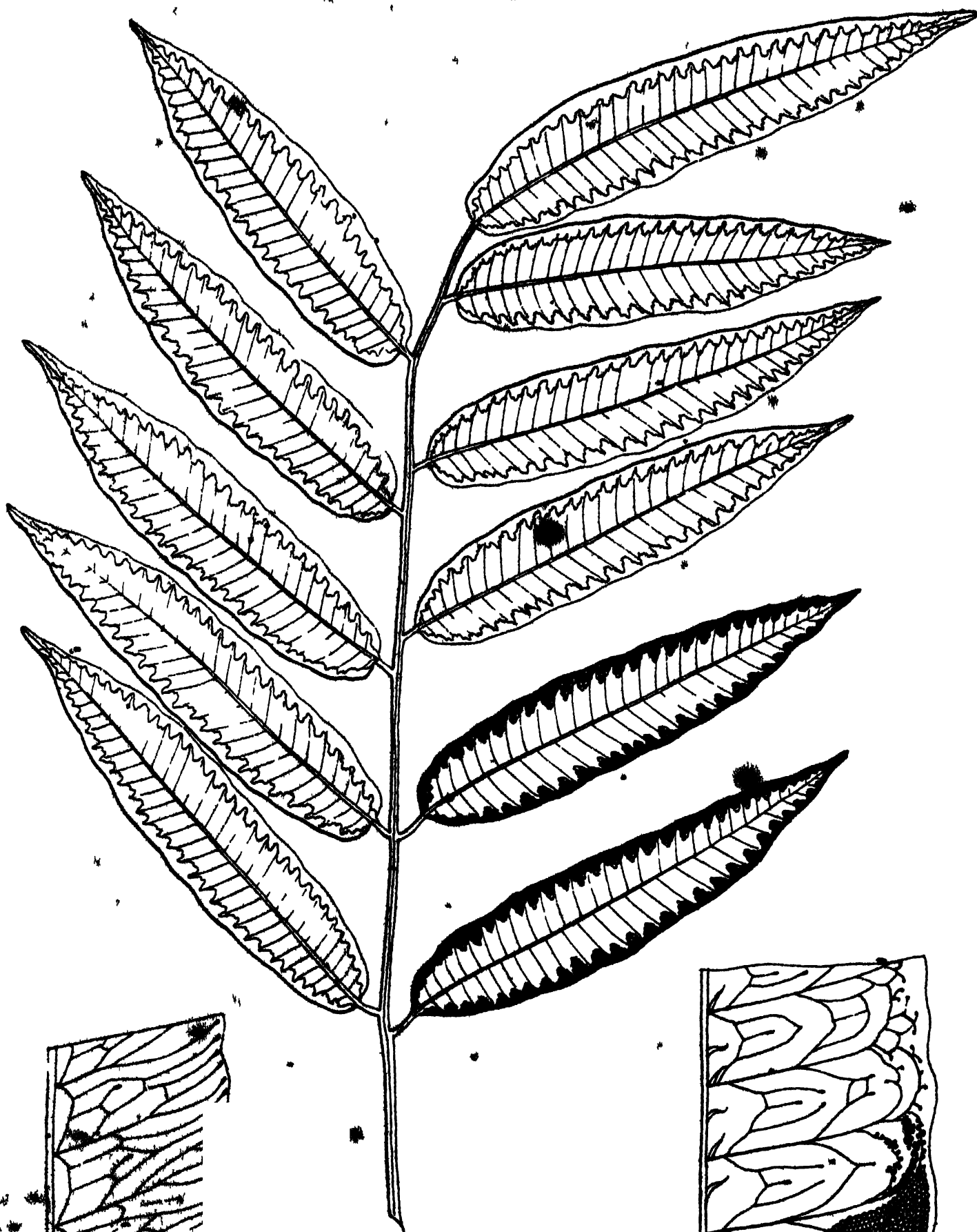
P A C I L O P T E R I S C O S T A T A (See p 113)

Form  $\gamma$  UNDULATA resembling var  $\beta$  but the sori frequently only marginal forming a broad band, but often extending a little way down between the costules towards the costa the disk of the pinnae naked Nothochlaena undulata Wall Cat n 140 — Jenkinsia Hookeriana C. B. Cl. t 73 Moore — Campium P. — Cyrtogonum f. Sm. — Iomariopsis, Metten — Heteroneuron sculpturatum Lec. exost. p. 95, t. 56 Judging from the figure — (Sori universal on the pinnae)

The specimen figured is from Moulmein — (Larish)

Hab Martaban, Moulmein Khasya Sikkim

PLATE No CVV



*Opalopterus costata*, var. *undulata*  
(Hook.)





## GYMNOPTERIS (See Ferns of Southern India, p 15)

**GYMNOPTERIS MINUS** (Metten) Small caudex creeping thick as a sparrow's quill scaly at the apex stipules remote slender 1 3 or in those of the fertile frond 4 inches long *Sterile* fronds membranaceous  $1\frac{1}{2}$  2 inches long oblong or broad—lance late costate tapering into a stipes  $2\frac{1}{2}$  inches long costules indistinct areoles with a free included clavate veinlet smaller towards the margin *fertile* fronds 2 inches long linear obtuse — *Hook Sp Fil v 277 Metten Fil Hort Lips p 20* — *Leptochilus, Fee Acrost p 87, t 47, f 2 according to his figure (excl Syn J Sm)* — *Gymnopteris Hook 2nd Cent of Ferns t 78*

The specimen figured is from Khasya—(Calcutta Herb)

Hab Khasya near Churra, alt 2,000 - 3,000 feet Isle of Samar Philippines

PLATE No CXVI









## TAFNIOPSIS (See Ferns of Southern India p 18)

**TAFNIOPSIS AMBOINENSIS** (Fee) Fronds smooth submembranaceous falcate acuminate tapering below into a petiole, costa slender, disappearing below the apex veins curved equal approximate sori closely marginal cuticle of the margin resembling a false involucre caudex flexuose contorted scaly scales cancellate rigidly toothed at the margin. —*Hook Sp Fil* 1 177 *Fee Vittar* p 44 t 1 f 1

The veins are combined where fertile by an intra marginal vein which runs along the centre of the receptacle, I could not however make out from my solitary specimen if this vein is present where the frond or portion of the frond is sterile

The specimen figured is from Birmah—(Lalish)

Hab Birmah, Amboyna

PLATE No CXVII







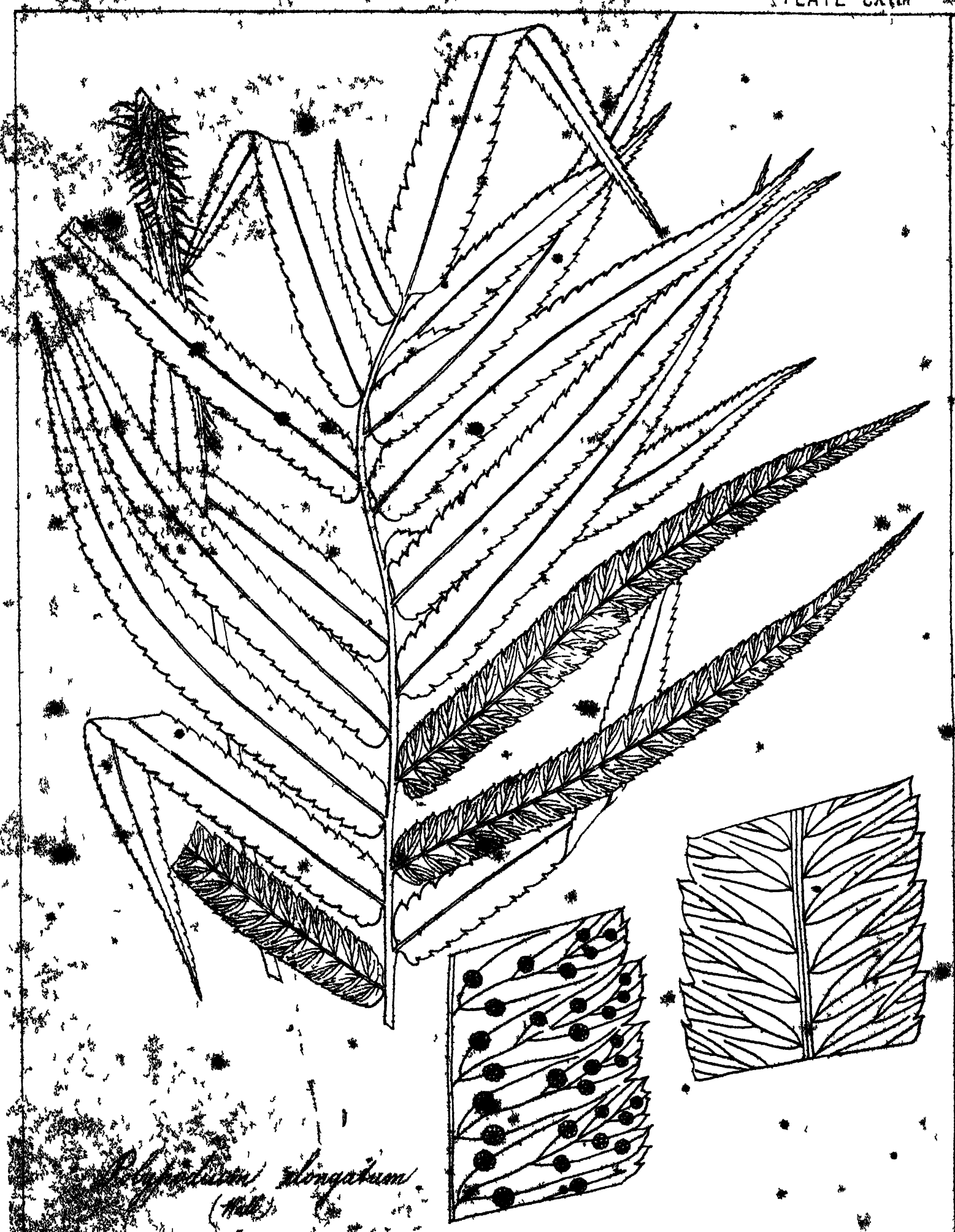
## POLYPODIUM (See Icons of Southern India, p 55)

**POLYPODIUM LONGATUM** (Wall) Caudex? stipes 1 1½ foot and more long stout tawny brown very paleaceous below with dark castaneous glossy falcate subulate long acuminate scales fronds ample 2 feet and more long 6 10 inches and more broad, thin firm coriaceous ovate oblong acuminate pinnate to the very apex pinnae numerous more or less patent and distant 5 10 inches long ½ an inch broad subpetiolate from an obliquely cuneate but not dilated (rarely subauricled) base linear or elongate oblong finely acuminate the margin pinnatifid subduplicate serrated serratures subspinose terminal pinnae like the rest but more petiolate veins copious fasciculate pinnate veinlets each of them bearing a dorsal sorus and thus copious and irregularly scattered over the back of the frond in an irregular series *Hook Sp Fl iv 234 Wall Cat n 309*,—*Aspidium cuspidatum Metten Aspid p 92*

The specimen figured is from Khasya— (from the Ceylon Herb )

Hab Nepal, Khasya

II ATL No CXXVIII



*Polygatum elongatum*  
(Hall.)







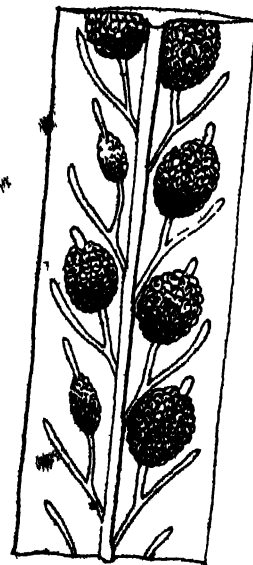
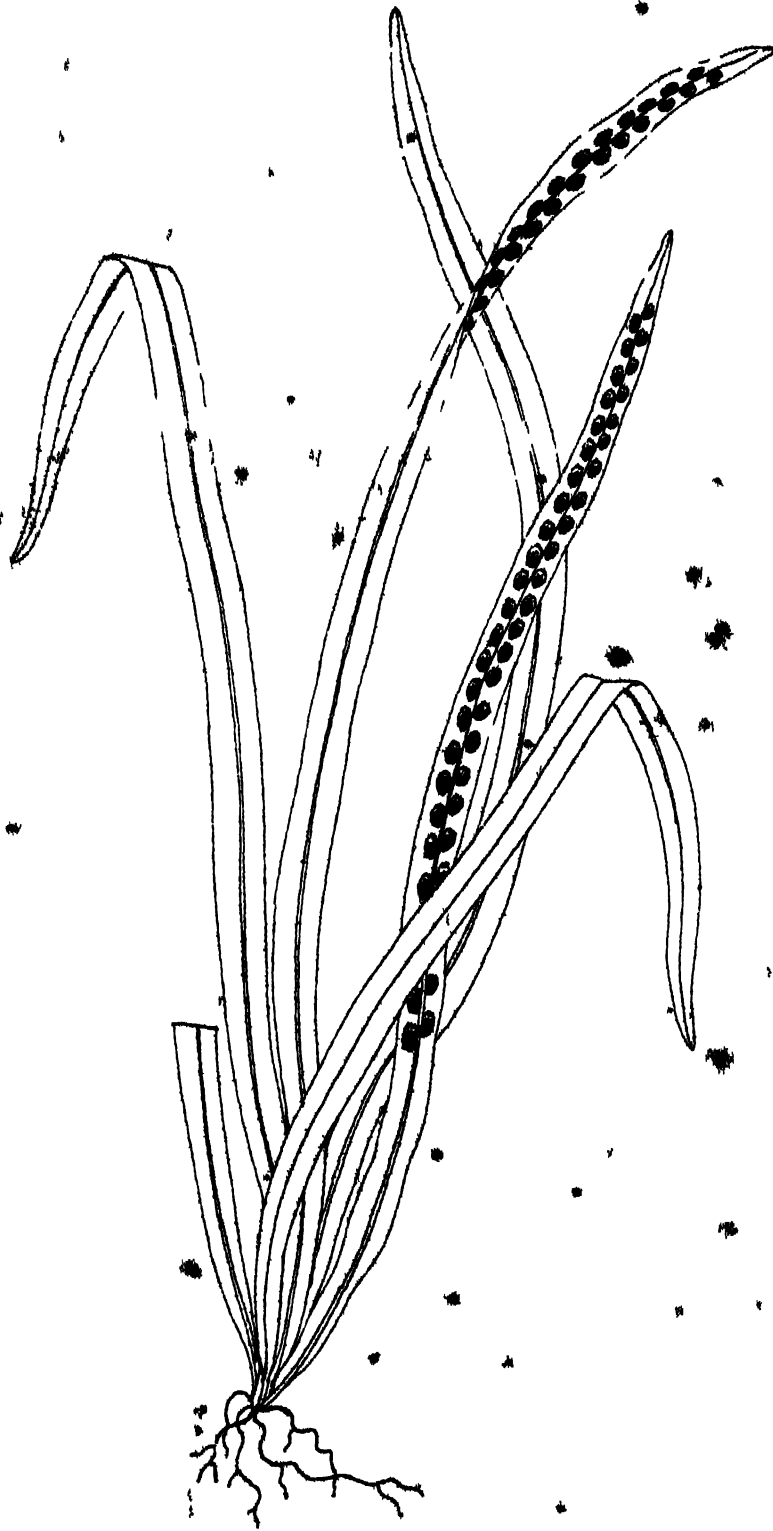
## POLYPODIUM

**POLYPODIUM SESSILIFOLIUM** (Hook.) Caudex small erect or ascending scaly stipites scarcely any fronds tufted membranaceous firm 3 8 9 inches long, 2 3 lines wide linear scarcely acuminate obtuse attenuated at the base veins oblique, approximate simple sori oblong parallel with the costa in lines or series intermediate between the costa and the margin *Hook Fil* iv 168

The figure is taken from Sir W Hooker's Sp Fil

Hab Penang Luzon, Java

PLATE No CXIX



*Polypodium sessilefolium*  
(Hook.)





## NIPHOBOLUS (See "Ferns of Southern India," p 61)

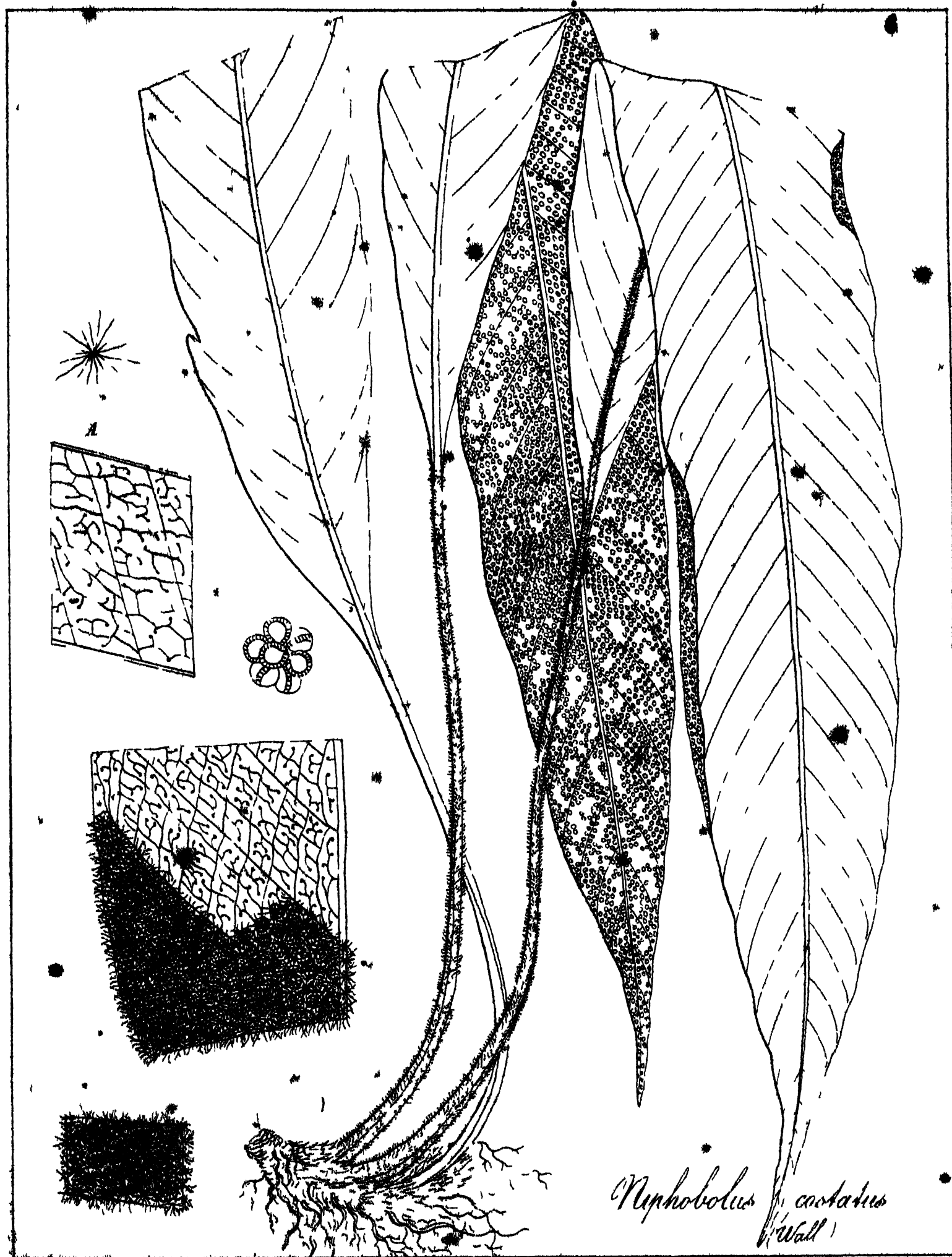
**NIPHOBOLUS COSTATUS** (Wall) Caudex creeping, rufo paleaceous with slender subulate scales stipites sub aggregate 1 inch to a span long angled, fronds a span to 1½ 2 feet and more long 1 2 3 inches and more broad firm (but not apparently carnosus)—coriaceous even sub membranaceous in age glabrous above beneath densely stellate tomentose and subfurfuraceous (tomentum forming a close coat) lanceolate or sub oblanceolate acuminate gradually tapering below and decurrent upon the stipes, primary veins or costules distinct elevated on the under side some immersed very minute and numerous arranged in compact closely placed lines or series between the costules and in equally compact series transversely with them. *Hook Sp Fil* v 50 *Wall Cat* p 265 *Mett Polyp* p 131 t 3 f 14 (venation) —*Niphobolus Pr*, —*Apalophlebia, l r Epim* p 138, —*Niphobolus venosus Bl Fil Jav* p 63 t 28 (very good but small fronds) —*Apalophlebia Pr Epim* p 139

The specimen figured is from Moulmein—(Parish)

Fig. A shows the venation (between the costules) considerably magnified

Hab. Nepal Khasi, Assam, all along the Himalayas from Kumaon to Sikkim, Moulmein Java New Guinea

PLATE No CXX



*Nephrolepis costaricensis*  
(Wall.)







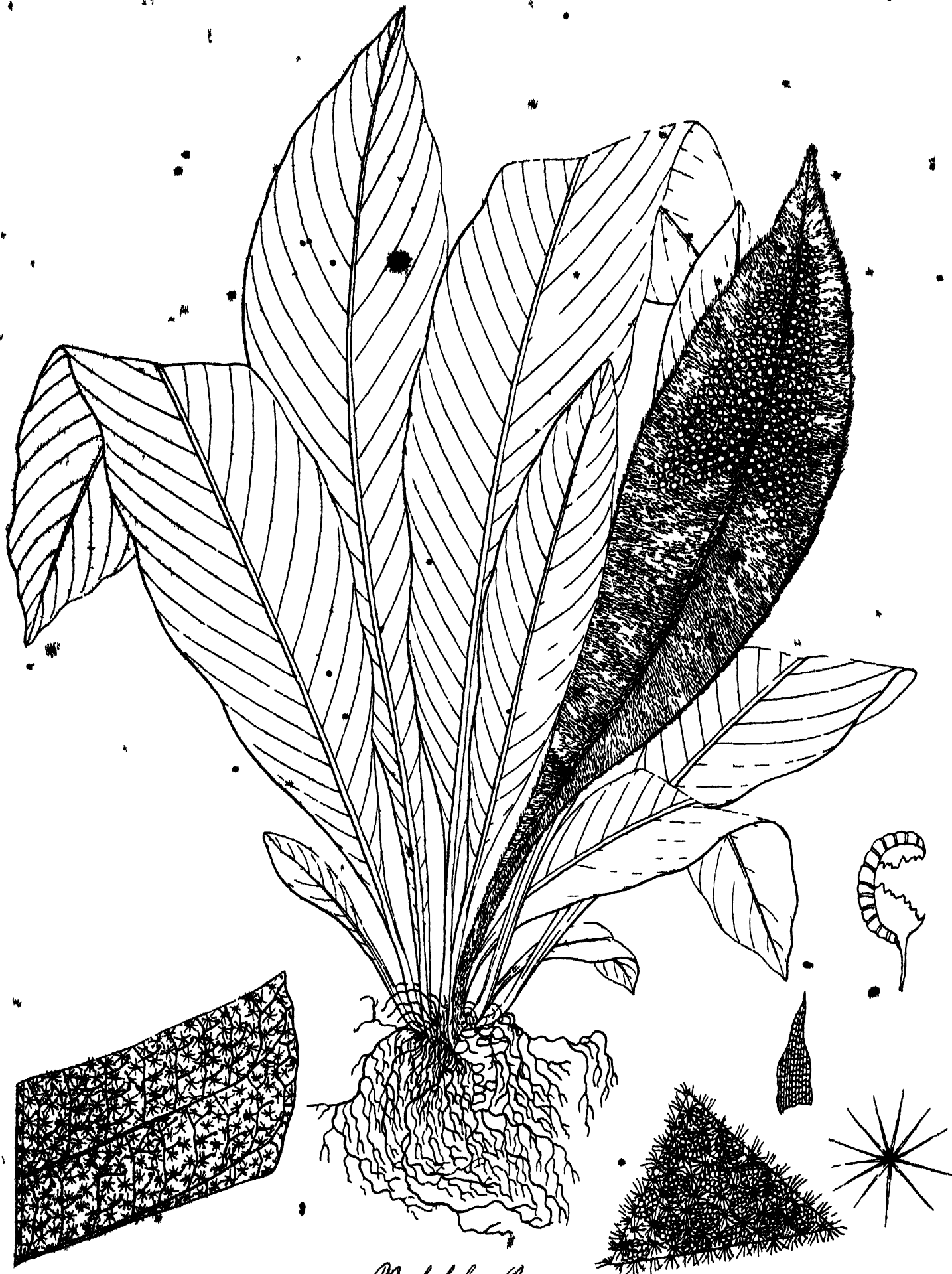
## NIPHOBOLUS

**NIPHOBOLUS PLANGIANUS** (Hook) Caudex ? Stipes scarcely any fronds submembranaceous,  $1\frac{1}{2}$  foot and more long  $2\frac{1}{4}$  inch wide oblanceolate finely acuminate the base much and gradually attenuated sessile the margin irregularly sinuated glabrous above (at least in maturity) beneath thinly clothed with fuscous stellated hairs venation internal but manifest when viewed between the eye and the light costules not elevated areoles 16 18 between the costa and the margin including 2 to 4 simple or forked clavate soriferous veinlets sori prominent (not sunk) forming a broad mass in the disk of the upper half of the frond arranged with great regularity in four longitudinal series parallel with the costules and within each areole are transverse line each of four sori capsules mixed with long stipitate peltate stellated scales *Hook Sp Fil* v 52 *Hook Ic Pl* t 203 *Gen Kul* 83 *Polycarpum*, *P*

The specimen figured is from Birmah—(Parrish)

Hab Birmah Penang

PLATE No CXXI



*Nephrolepis Penangianus*  
(Hook.)





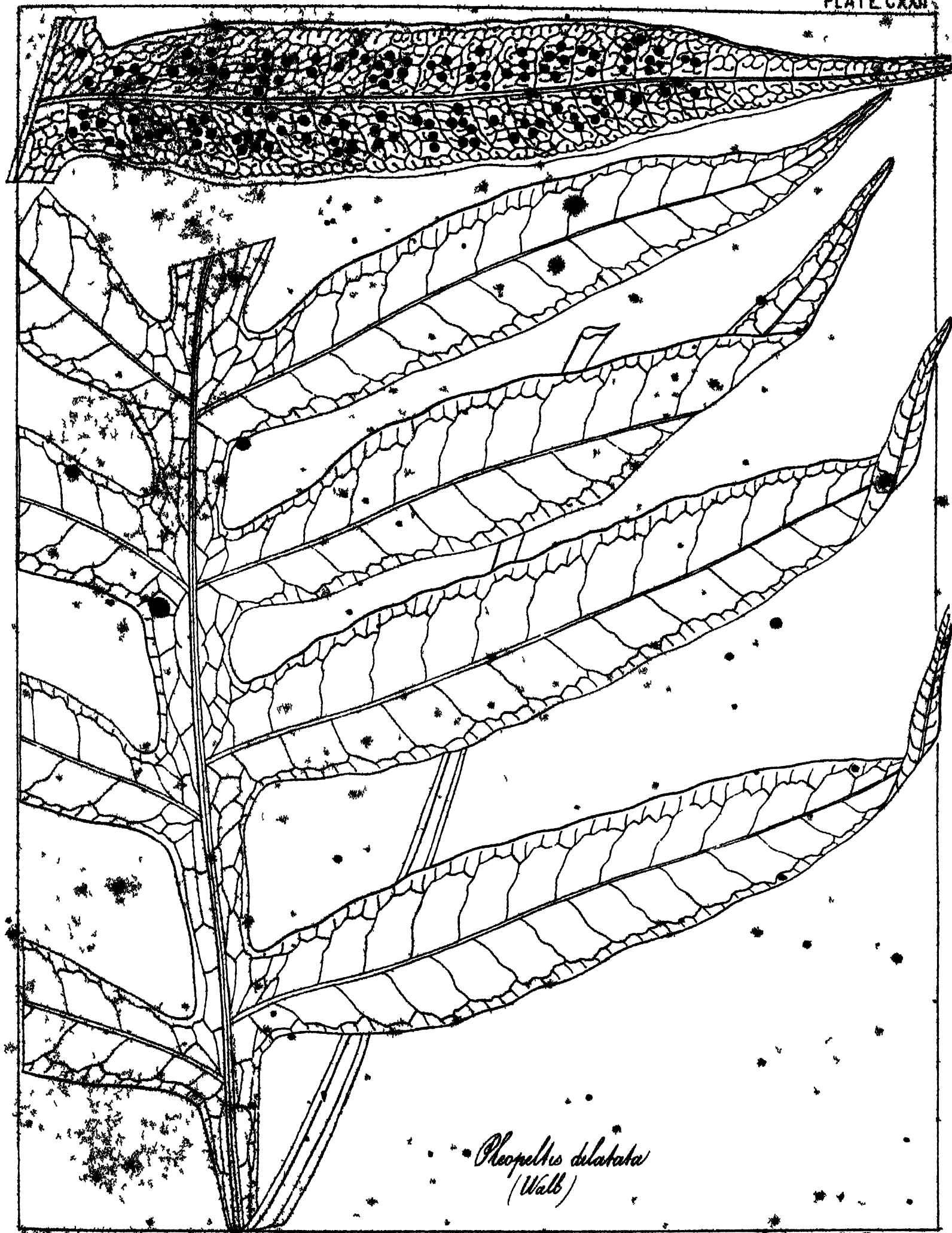
## PLEOPELTIS (See ' Ferns of Southern India,' p 57 )

**PLEOPELTIS DILATATA** (Wall) Caudex creeping (short ?) paleaceous with ovate reticulated scales, stipites  $1\frac{1}{2}$  foot and more long but strongly winged for its whole length by the decurrent base of the frond (not articulated on the caudex), fronds ample  $1\frac{1}{2}$  2 and 3 feet long a foot and more wide membranaceous light green glabrous oblongo ovate pinnatifid to within  $\frac{1}{2}$  1 inch of the rachis (less towards the base) segments 5 6 or 8 inches long (shorter towards the apex),  $\frac{3}{4}$  1 rarely 2 inches wide, oblongo lanceolate acuminate entire suddenly decurrent costules veniform forming large primary areoles which extend two thirds of the way to the margin and include the sori these and the rest of the segments are occupied by lesser irregular areoles including many free veinlets their branches moderately divergating sori numerous very small often oval or more or less elongated compital on the secondary veins and veinlets *Hool Sp Fil v 80 Wall Cat n 29* —*Drynaria acuminata* ! *Black Fil U S Frl Exp*, p 47

The specimen figured is from Moulmein—(Parrish)

Hab Nepal, Khasya, 1 000 6 000 feet Malacca, Malay Peninsula Moulmein ascent of Moolit alt 1 000 feet Samoa Navigator's Islands

PLATE No CXVII



*Phaeopeltis dilatata*  
(Walb.)







## PLEOPELTIS

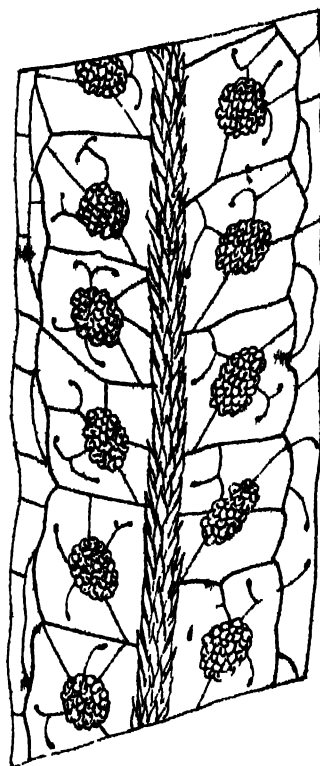
**PLEOPELTIS ZOSTERIFORMIS** (Wall) Cladex short fragile black creeping apparently under ground or rather under water scalclos stipites very slender weak and filiform  $\frac{1}{4}$  1 inch long aggregated fronds 4 6 inches long less than  $\frac{1}{4}$  of an inch wide carinose membranaceous black when dry linear vittatoid scarcely acuminate subacute entire gradually long-attenuated below into the thread like stipes costa prominent beneath and scaly with blackish appressed somewhat fleshy small ovate scales venation very distinct when seen between the eye and the light, costules none veins anastomosing so as to form 2 3 series of large parallel but very irregular areoles with no free veinlets Sori in a single but irregular series between the costa and the margin capsules lax *Hook Sp Fil v 6, Wall Cat n 280 Melten Polyp p 86 (venation)*

*Nearly allied to P tridactylon Wall at least to the Southern Indian form*

The specimen figured is from Birmah—(Parish)

Hab Birmah

PLATE No CXXIII



*Pleopeltis zosteriformis*  
Wall.





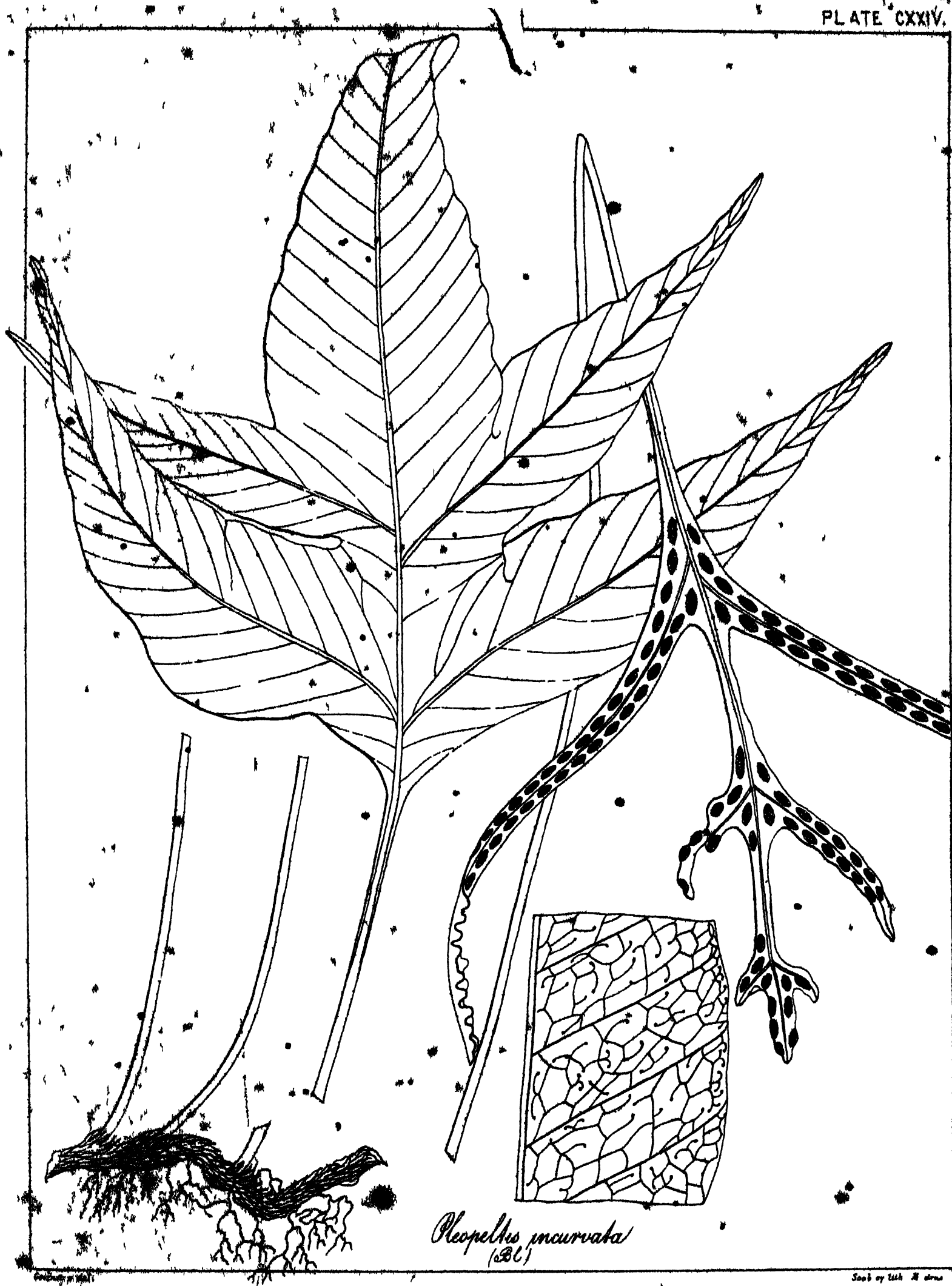
## PLEOPELTIS

**PLEOPELTIS INCURVATA** (Bl) Caudex creeping paleaceous, stipites scattered a span to a foot long of the *sterile* frond. Length of the *fertile* glossy brown fronds firm coriaceous glossy dimorphous *sterile* ones 6-10 inches long 8 inches to 1 foot wide *hastato*, tripartite simply ovate or pinnatifid with 4-6 lateral lobes lobes ovate acuminate entire horizontal terminal one very large, all thickened at the margin costules distinct but immersed, venation internal and very indistinct *fertile* fronds very long stipitate 10 inches to a foot long, nearly as much wide very broad ovate deeply pinnatifid nearly to the rachis below subpinnate segments 5-15 4-8 inches long very remote linear and acuminate decurrent at the base sori large copious oval sunk into a very deep cavity which forms a circular elevated truncated tubercle on the opposite side occupying the space between the costa and the margin in a single series *Hook Sp Fil* v 77 *Bl Fil Jar* p 151, t 65 *Mett Polyp* p 106, t 1, f 30 (*venation*)

The specimen figured is from the Calcutta Herbarium

Hab Mount Ophir, Malacca, Java

PLATE No CXXIV



*Pleopeltis incurvata*  
(Bl.)







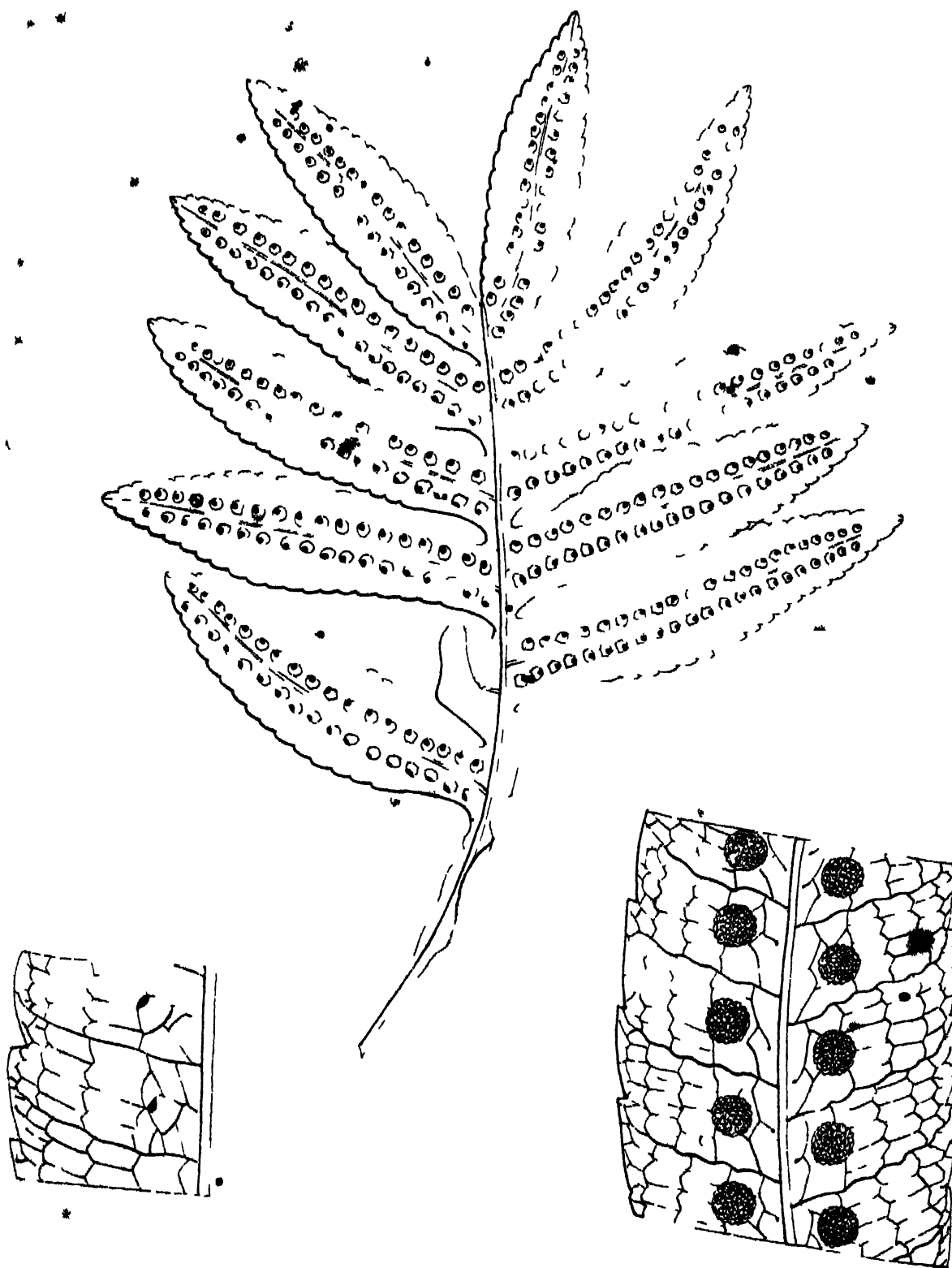
## PLEOPELTIS

**PLEOPELTIS PARISHII** (Bedd.) *Cnidex*? Stipites short and more or less winged with the decurrent base of the frond fronds coriaceous membranaceous glabrous very broadly ovate deeply pinnatifid segments obtuse undulated on the margin and distantly crenated venation very prominent costules slightly thicker than the veins which latter form 4 or 5 areoles between the costa and margin veinlets forming a very regular series of lesser parallelogrammoid areoles with rarely a few free veinlets. Stipules in a single series in the second areole from the costa deeply sunk and forming a prominent pustule on the upper surface

The specimen figured is from Moulmein—(Parish)

Hab Moulmein

PLATE No CXXV



*Heepeltia Faruchii*  
 Boiss.





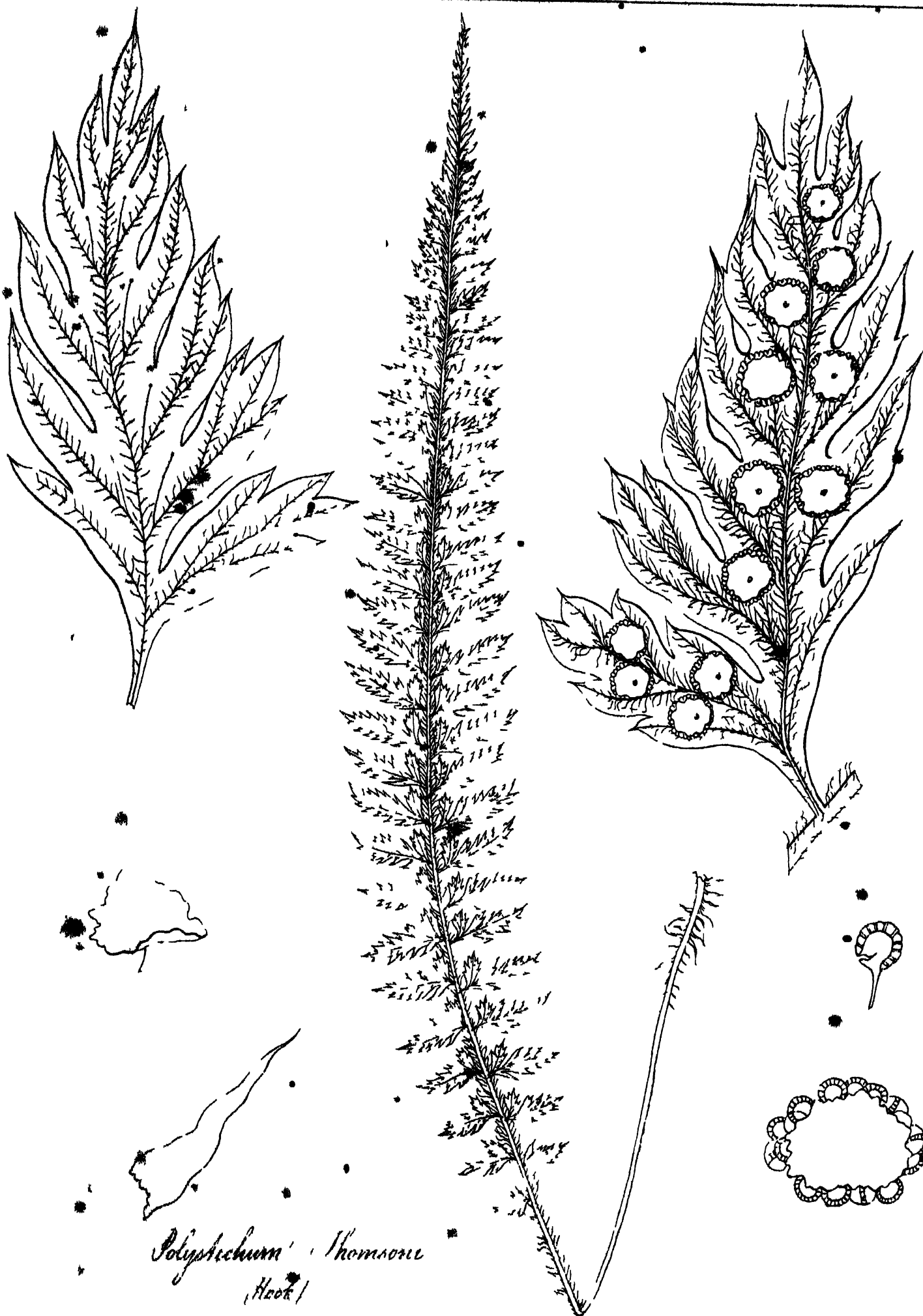
## POLYSTICHUM (See "Ferns of Southern India" p 41)

**POLYSTICHUM THOMSONI** (Hook) Caudex short thick scaly stipites tufted 1 3 4 inches long paleaceous with large scales fronds 6 8 inches long lanceolate acuminate chartaceo membranaceous pinnate pinnæ sub sessile 1 to 4 inches long deltoid ovate or semi ovate acute subauricled and deeply pinnatifid (especially at the superior margin) lobes small ovate inciso serrate teeth setoso spinulose sori solitary on each lobe involucre subovate membranaceous peltate pedicellate the margin suberose *Hook Sp Fil* iv 7  
*Hook 2nd Cent of Ferns t 25*

The specimen figured is from Sikkim—(Dr Thomson )

Hab Sikkim, Himalaya, Kumaon, elev 9 to 13,000 feet Simla

PLATE No CXXVI



*Polystichum Thomsoni*  
(Hook.)







## POLYSTICHUM

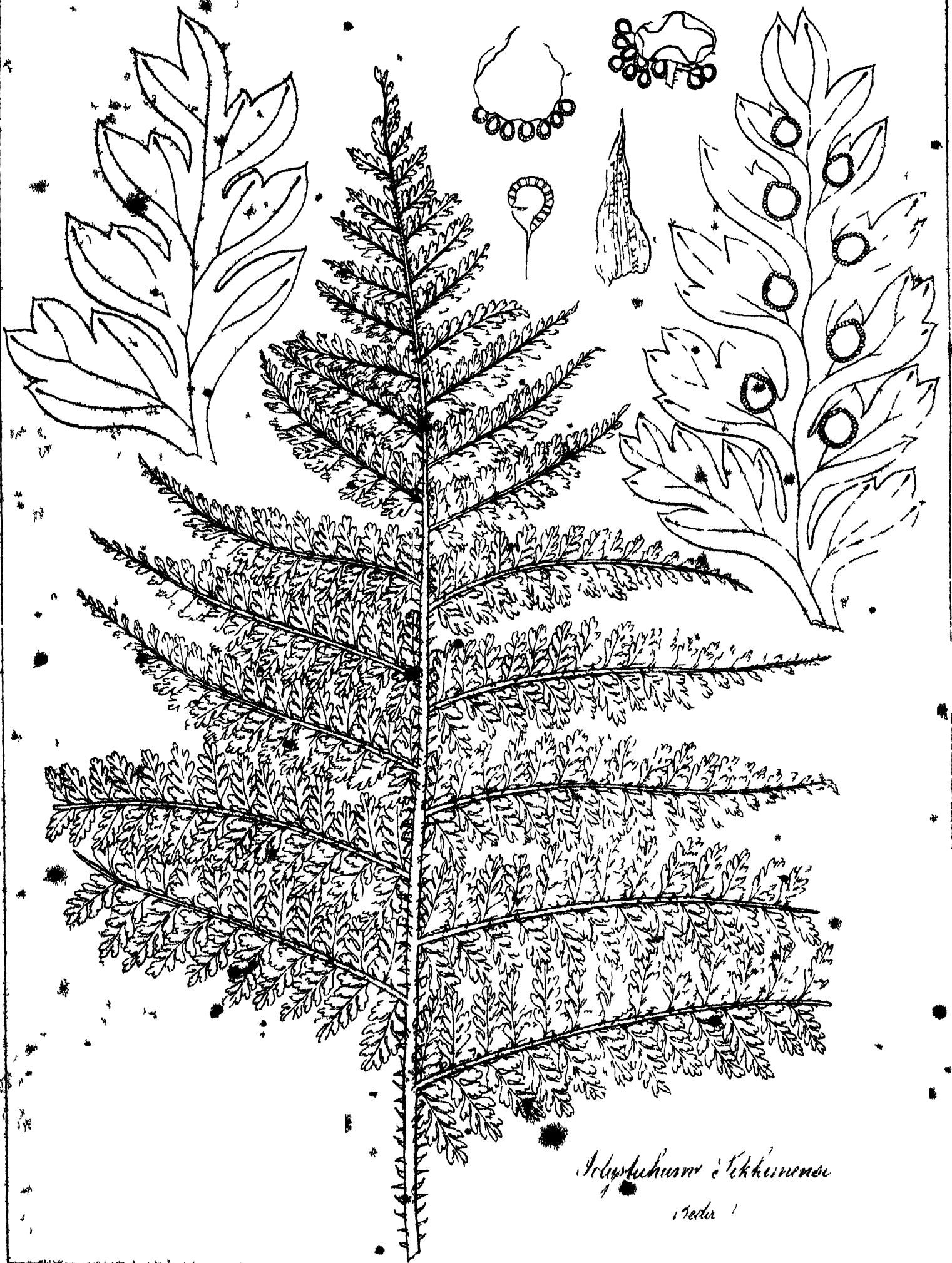
**POLYSTICHUM SIKKIMENSE** (Lodd.) Caudex ? Stipes and rachises rather copiously furnished with persistent scales fronds ovate acuminate subcoriaceous membranaceous tripinnate primary pinnae 4-6 inches long, oblong acuminate pinnules oblong deeply pinnatifid  $\frac{1}{2}$  an inch to 1 inch long secondary pinnules variously pinnatifid with the segments acuminate and falcate costa of the pinnules waved veins simple or forked terminating within the margin sori generally one to each segment involucre suborbicular peltate stalked with the stalk below the centre

The specimen figured is from Sikkim—(Dr. Thomson.)

Hab. Sikkim, Himalaya

I forwarded specimens of this fern lately to Sir W. Hooker who pronounced it to be an undescribed species and informed me that he intended publishing it in his synopsis under the name of *Nephrodium (L.) Thomsoni*—the involucre however in specimens which I received from Dr. Thomson and in others lately collected by Dr. Anderson are always those of *Polystichum*, and not *Lastrea* and there is already a *Polystichum Thomsoni*

PLATE No. CXXVII



*Adiantum fukienense*  
Seda





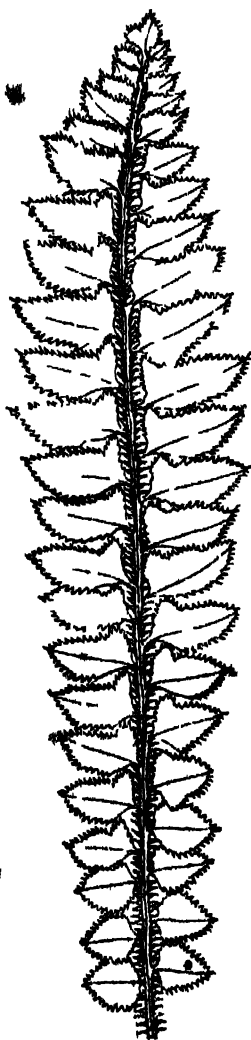
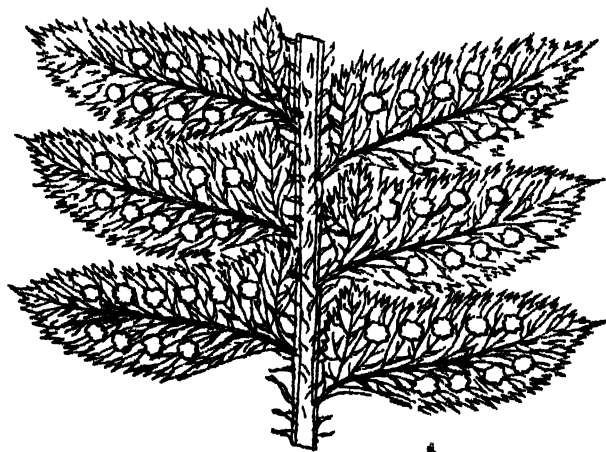
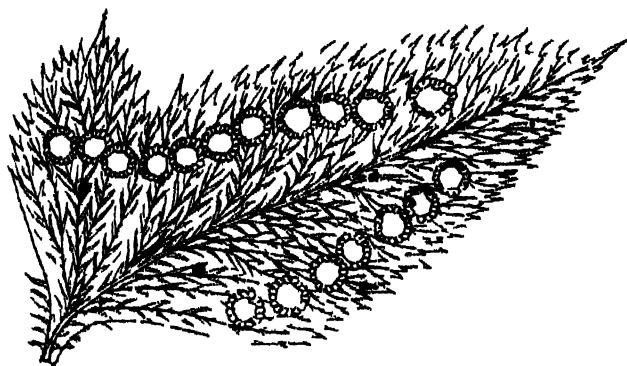
## POLYSTICHUM

**POLYSTICHUM LONCHITIS** (Sw.) Caudex short stout oblique densely paleaceous as are the short stipites and lower portion of the rachis with ferruginous large scales fronds 6-18 inches long densely tufted erect rigid lanceolate tapering at both ends pinnated pinnae numerous approximate from a broad nearly sessile obliquely truncated base ovate or lanceolate falcate acute rather than acuminate spinuloso serrate the superior base truncated and auriculate sori confined to upper portion of the frond in two or more series upon the pinnae *Hook Sp Fil* iv p 8 *Sis Syn Fil* p 43 *Willd Sp Pl* iv p 224 *Sm Fil Brit* p 1118 *Fagl Fil* iv p 281 *Schl Fil* 7 29 f 29 *Mettlen Aspid* p 41 *Hock Lt Arn Brit Fl* et 8 p 382 *Hook Brit Ferns* t 9 —*Polypodium*, *Linn Sp Pl* 1 1518 *Engl Bot* t 796 *Polystichum Roth Fl* 1 *Germ in* p 71 *Liesl Moore Brit Ferns Nat Print* t 9

The specimen figured 1 from the N W Himalaya—(Dr Stewart)

Hab Temperate and cooler parts of Europe Michigan U States Lake Superior, British Columbia N W India

PLATE No CXXXVIII



*Polystichum Lonchitis*  
(L.)







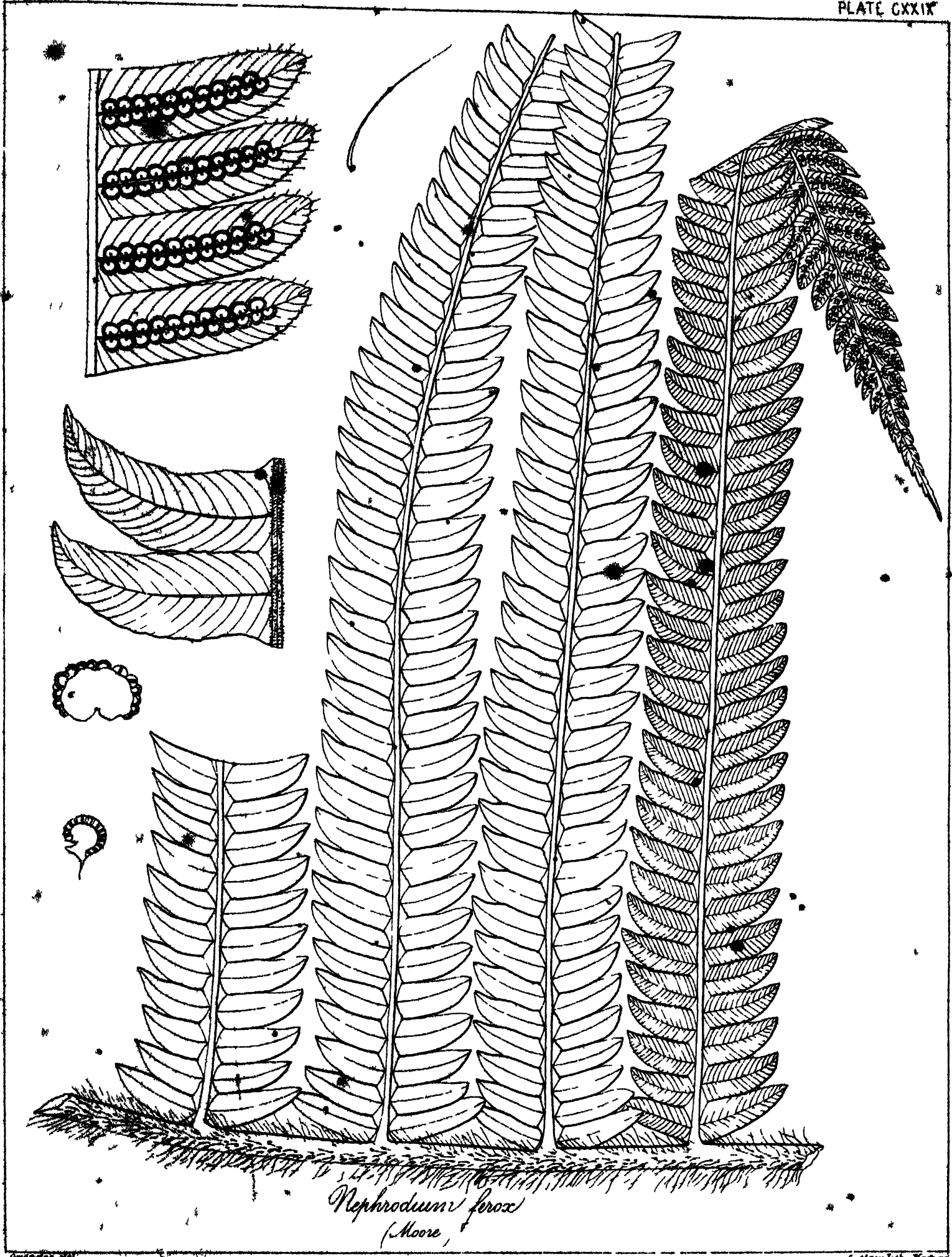
## NEPHRODIUM (See Ferns of Southern India p 29)

**NEPHRODIUM FERROX** (Moore) Stipes robust 2 and more feet long crinite with coarse long subulate blackish scales which more or less extend to the rachides each bristle like hair seated on a tubercle fronds ample probably several feet long very rigid and coriaceous glossy 2 3 feet broad (judging by the length of the pinnæ) glabrous pinnated pinnæ numerous sessile approximate 1 1½ foot long often an inch broad sessile from a truncated base elongate oblong falcate finely acuminate regularly (about one third of the way down from the margin) pinnatifid with ovate acute pungent falcate segments costa and costules prominent beneath veinlets close placed elevated six to eight pairs united and excurrent forming a pseudo costule as distinct as the costule from which they spring and which terminates at the sinus soon in two rows close to the costule apparently forming a single brown transverse line or band not prolonged into the segments *Hook Sp Fil* iv 77 *Aspidium Bl En Fil Jav* p 153 — *Goniopteris aspera J Sm in Hook Journ Bot* iii p 396 — *Polypodium asperum Roxb in Herb Linn (fide J Sm)*, — *P scabrum Herb Roxb (fide Wall Cat n 2225)*

The specimen figured is from the Calcutta Herbarium

Hab Kumaon, Luzon, Java

PLATE No CXXIX



*Nephrodium ferox*  
(Moore)

Overlook 1881

S. Obroy Lith. Madras





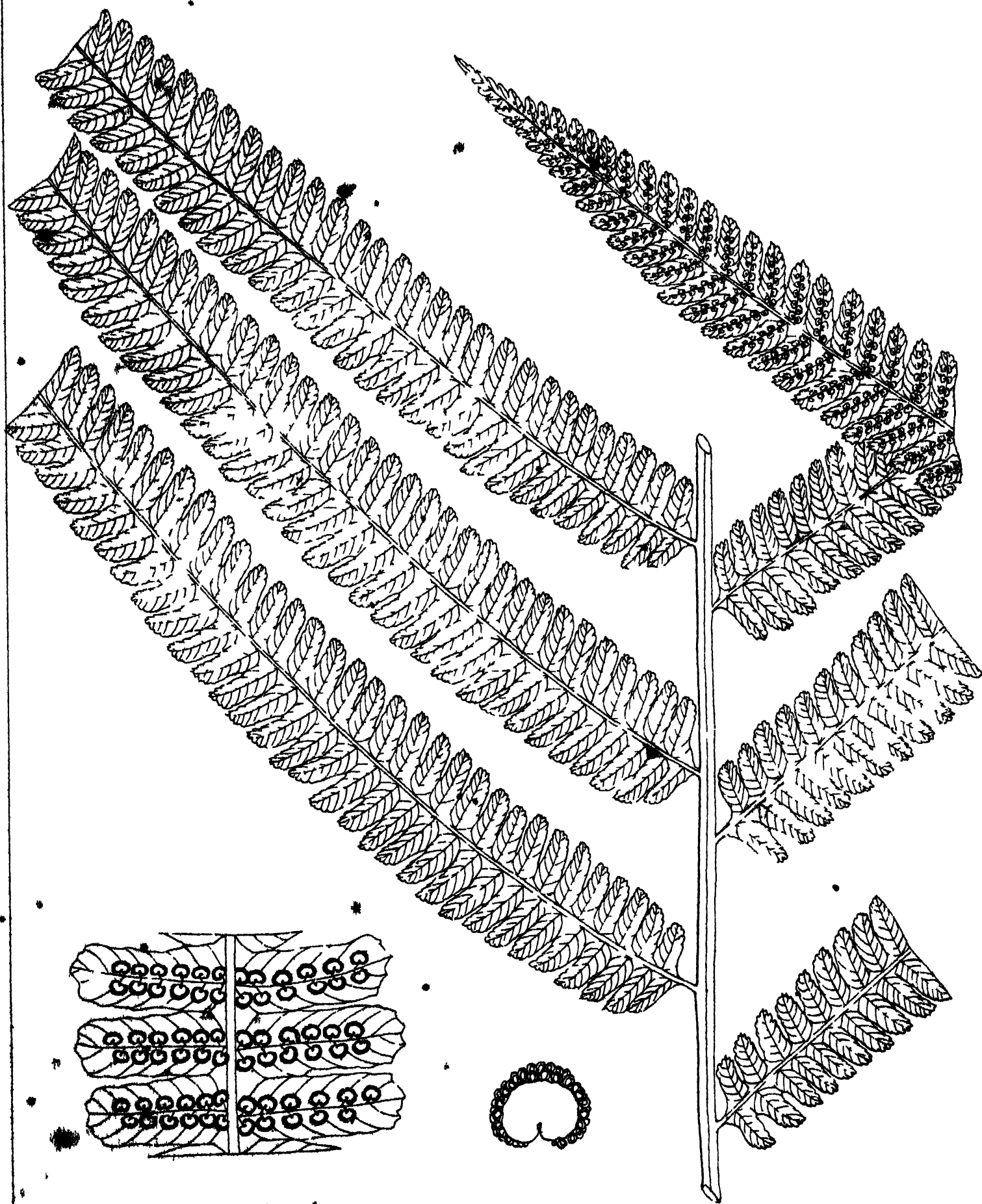
## NEPHRODIUM

**NEPHRODIUM EUSORUM** (Thw) Caudex short fronds glabrous or sub glabrous lanceolate acuminate pinnate pinnæ numerous linear acuminate 5 10 inch long  $\frac{1}{2}$  to 1 inch broad, sub sessile pinnatifid generally about  $\frac{1}{2}$  way down to the rachis segments truncated unconspicuously toothed at the apex veinlets 6 8 pair the lower pair always and generally the 2 lower anastomosing, sori one to each veinlet a little below the middle *Thw En*, p 391

Mr Thwaites to whom I am indebted for the specimen of this fern informs me that he considers it quite distinct from the *Nep abruptum* (Presl) to which species Sir W Hooker is inclined to refer it All my specimens of *abruptum* have the pinnæ much less divided, and 3 to 6 (never less than 3) pair of veinlets anastomose the segments of the pinnæ are besides very different in shape Mr Thwaites has had both species under cultivation

Hab Ceylon

PLATE No CXXX



*Nephrodium pusorum*  
(Thunb.)







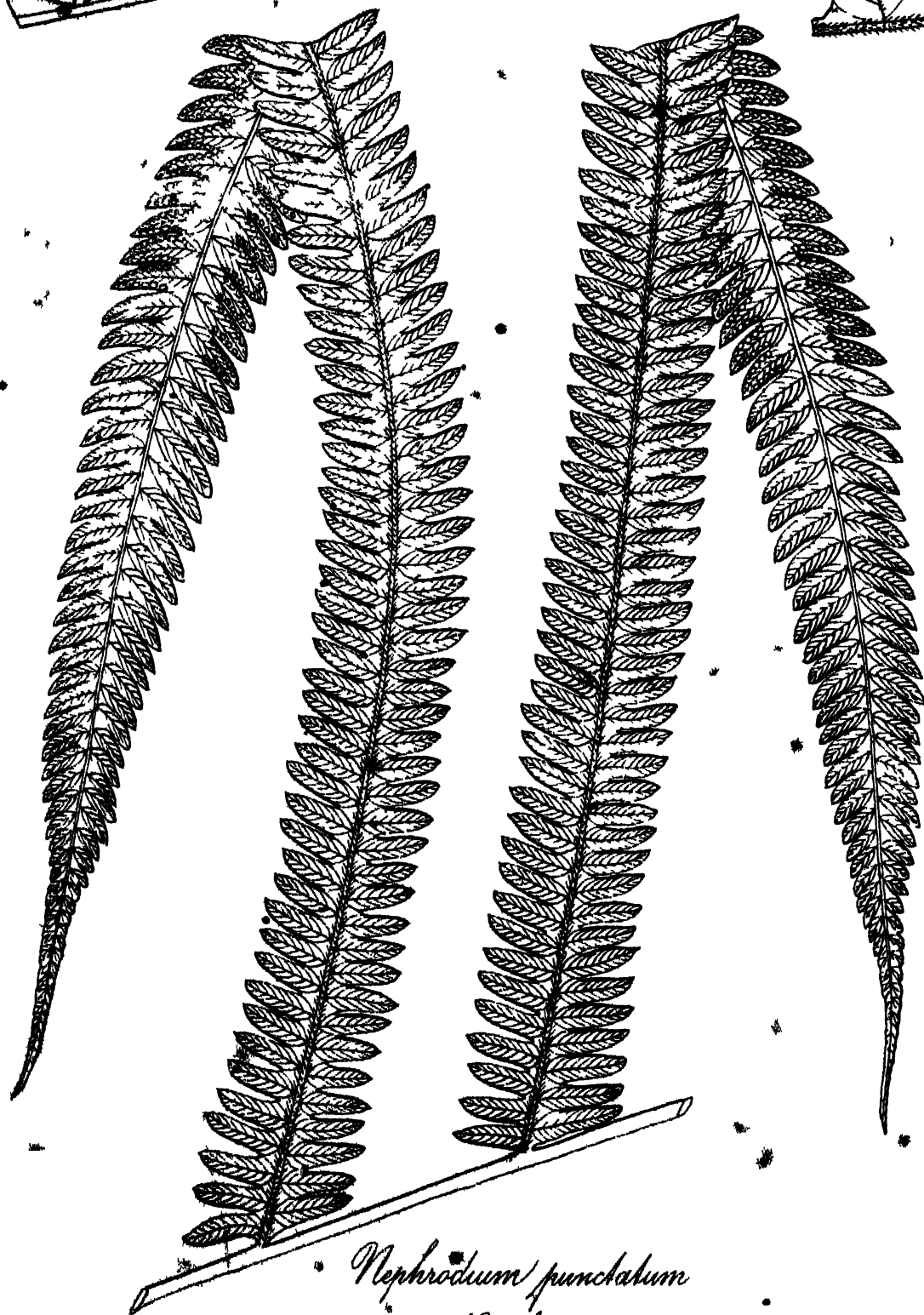
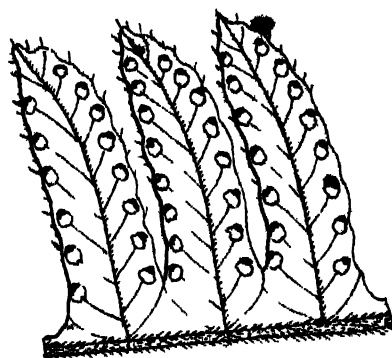
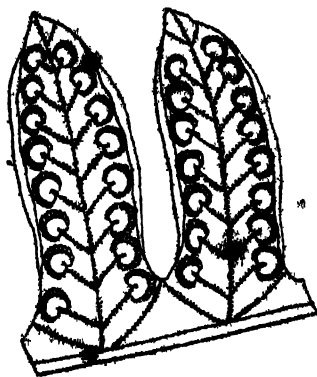
## NEPHRODIUM

**NEPHRODIUM PUNCTATUM** (Parish) Caudex a creeping rhizome stipites solitary distant 1 2 feet long with a few small subulate scales at the base fronds 3 4 feet high broadly ovate pinnate throughout their whole length Pinnæ alternate linear apiculate from 8 inches in the lowest to 12 16 inches long, in the centre over  $\frac{3}{4}$  inches broad becoming suddenly shorter at top of frond pinnatifid half way to the costa pinnules subfalcate sori marginal all round the pinnules sunk in the substance of the frond so as to give a punctiform appearance on the upper surface (Parish)

The specimen figured is from Moulmein—(Parish)

Hab Moulmein, damp jungles, rare

PLATE No CXXXI



*Nephrodium punctatum*  
(Barish)





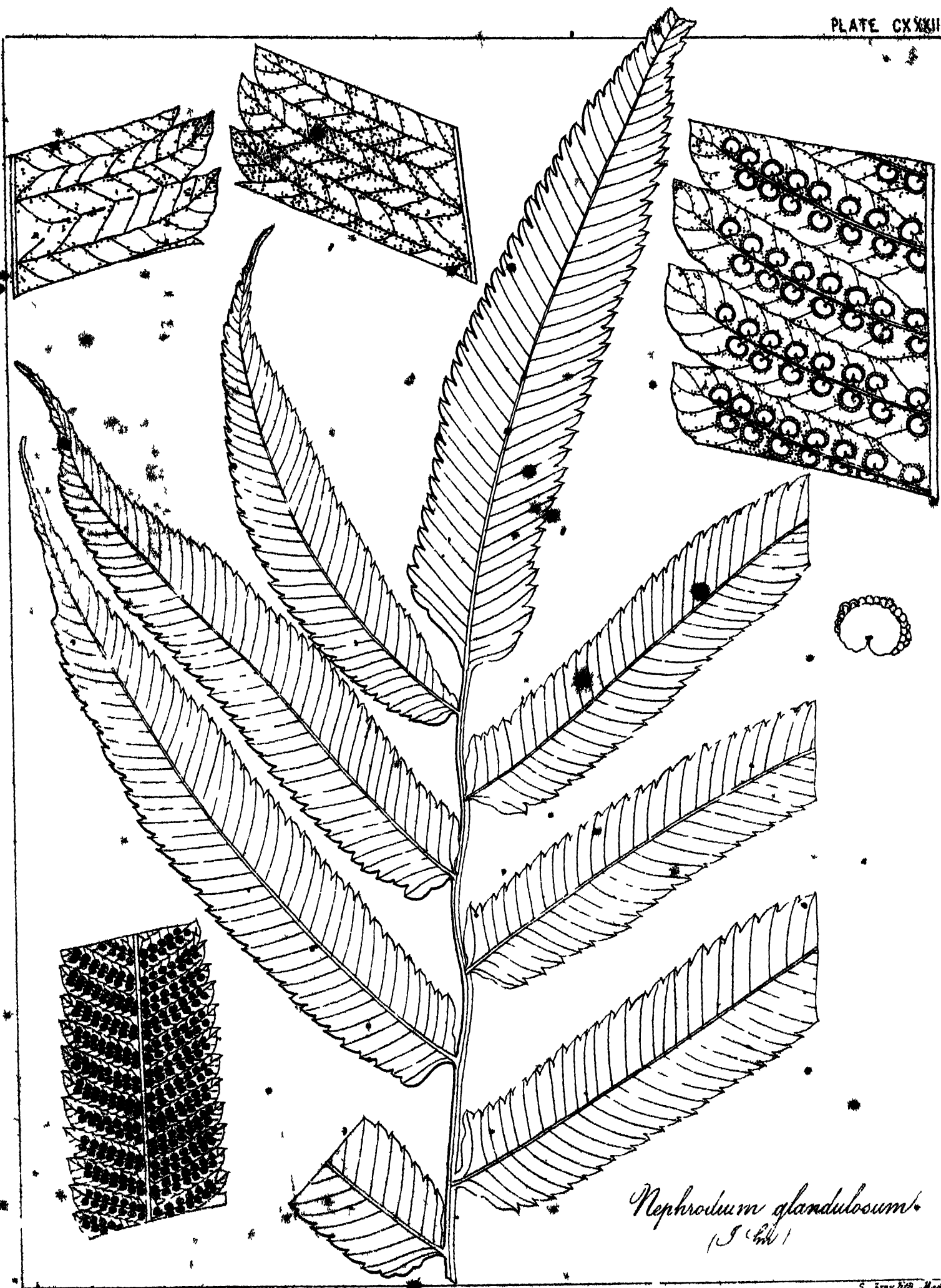
## NEPHRODIUM

**NEPHRODIUM GLANDULOSUM** (J Sm) Fronds coriaceous membranaceous pinnate glabrous on both sides, pinnae alternate sessile from a broad truncated base about 6 inches long and an inch to an inch and a quarter broad gradually and rather long acuminate covered with small glandular tubercles on both sides coarsely lobato serrate, serratures falcate acute veins 9-10 pair generally all anastomosing (except the 2<sup>nd</sup> upper pair in the serratures) and the excurrent veinlets joined throughout and forming a very prominent flexuose pseudo costule the lower pair of veins or one of them is sometimes free, and the excurrent veinlet is also sometimes free in 1 to 4 of the lower areoles some large situated a little below the middle of each vein indusium very apparent reniform —Nephrodium —J Sm in Hook Journ of Bot p 411 —Aspidium —Bl En Fil Ind p 141 / Hook Sp Fil iv 76

The specimen figured is from the Himalayas (Mr Oldham) I am not quite sure whether I have rightly named this and the following species several species of the genus Nephrodium are very closely allied to each other and it is impossible to say that intermediate forms do not exist both these species are closely allied to *N. abruptum* Presl the specimens here figured have the fertile and sterile fronds exactly similar and Sir W Hooker describes the *N. glandulosum* J Sm and *lineatum* J Sm as having the fronds dimorphous or subdimorphous I do not however attach any importance to this fact as I have often found *N. abruptum* with the fronds dimorphous or with broad sterile pinnae and contracted fertile pinnae on the same frond or with both sterile and fertile pinnae exactly similar and I have constantly observed the same tendency in many other genera with dimorphous fronds (*Gymnopteris* *Leucopteris* *Meniscium* &c)

Hab Himalayas A sam Java Island of Leyte

PLATE XXXVIII



*Nephrodium glandulosum*  
J. E. S.





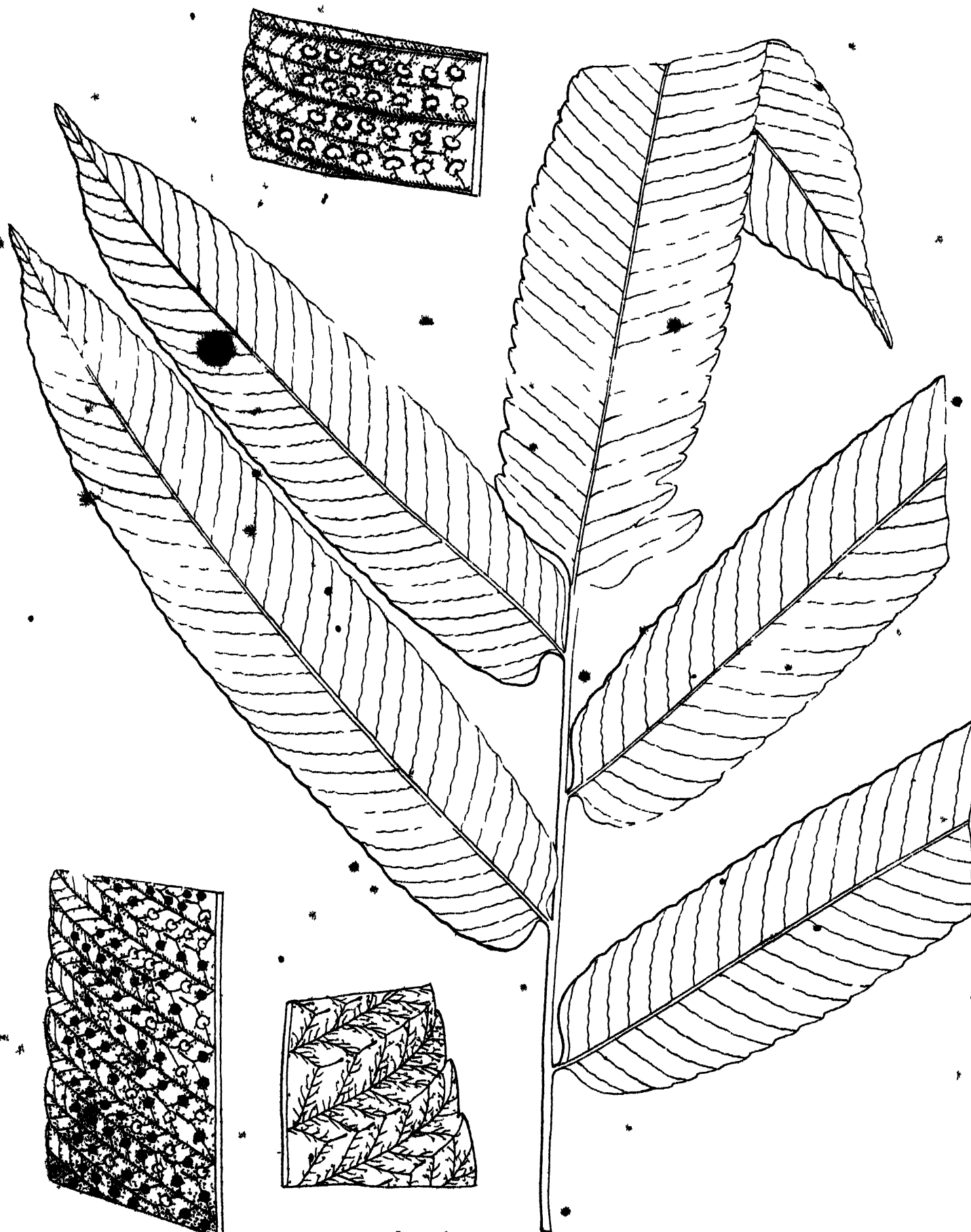


## NEPHRODIUM

**NEPHRODIUM LINEATUM** (Presl) Fronds ovate pinnate veins on the upper side furnished with a few distant longish hairs on the under side slightly pubescent or subglabrous pinnæ alternate sessile or subpetiolate 5 to 7 inches long by 1 to 1½ broad shortly and rather suddenly acuminate covered with minute glandular tubercles on both sides sub entire or more or less repando serrate terminal pinnæ often lobed towards the base veins 8 or 10 pair all or all but the upper pair anastomosing and at their junction excurrent the excurrent veinlet being generally free in the lowest pair but forming a continuous pseudo costule in all the others, sori small about the middle of each vein indusium apparent reniform *Nephrodium Presl Enumel Bot p 48 Hook Sp Fil iv 74 —Aspidium obscurum ? Bl En Fil p 150 ?*

The specimen figured is from Nynsee Tal (Mr Oldham) It is almost exactly similar to *Goniopteris urphylla* (Pl CCXXXIX) of the ' Ferns of Southern India ' except that it is always indusioid as Sir W Hooker observes it is very startling how some ferns of the *Aspidioid* group exactly resemble others of the tribe *Polypodiæ* the presence or absence of the indusium being almost the only distinction

PLATE No CXXXIII



*Nephrodium lineatum*  
(Presl)





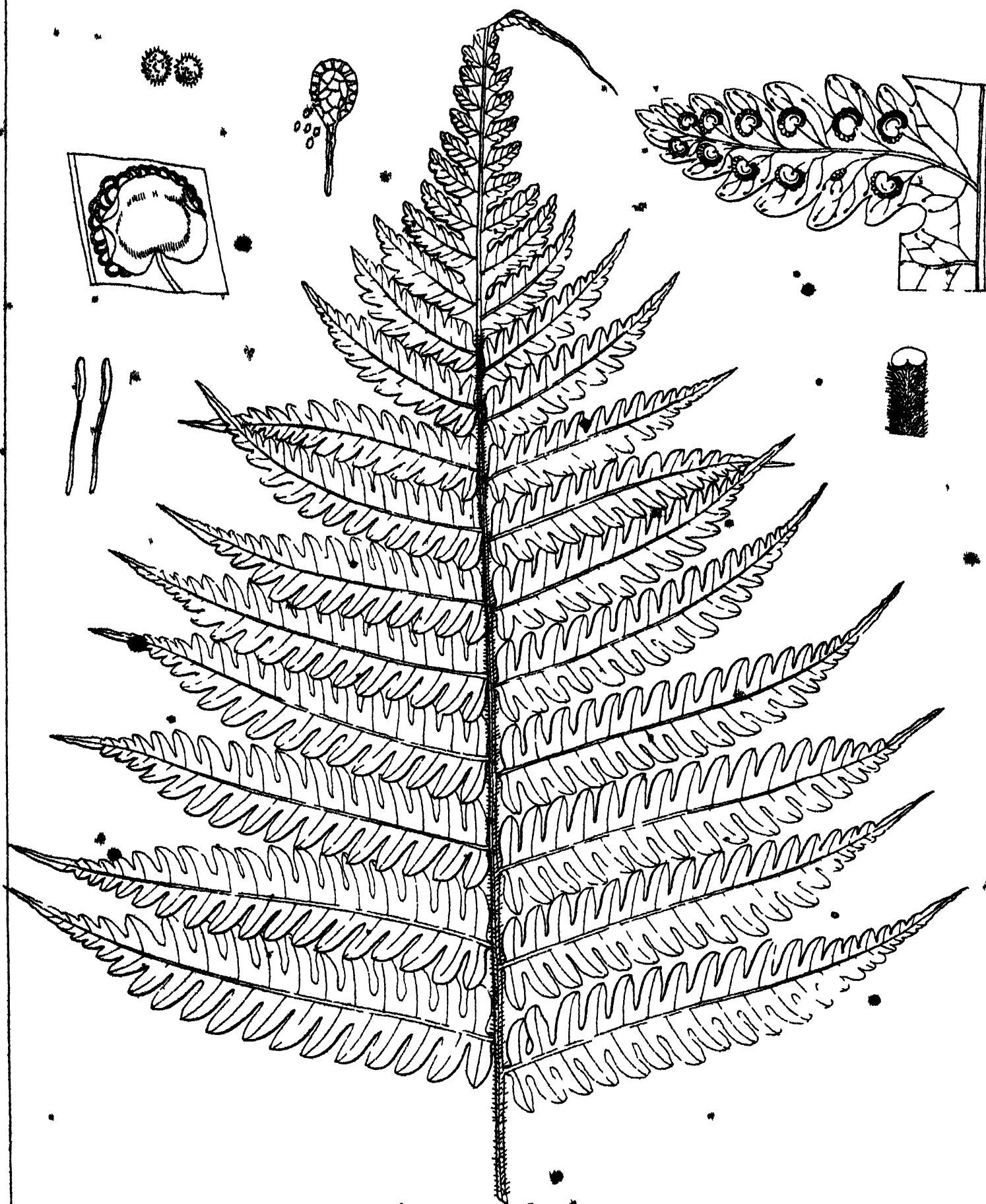
PLEOCNEMIA (See 'Ferns of Southern India,' p 28) \*

**PLEOCNEMIA LIUZEANA** (Kze) Stipes  $1\frac{1}{2}$  foot long stout angular orinite at the base with very long subulate flexu & silky scales fronds large ample submembranaceous tripinnate primary pinnæ a foot and more long, ovate acuminate petiolate pinnules  $\frac{3}{4}$  inches long petiolulate from a broad subcordate base oblong deeply (more than half way down) pinnatifid, ending in a rather long entire acumens fertile ones often contracted segments oblong obtuse subfalcate entire crenato-serrate the basal ones rarely sub lobato pinnatifid veins uniting and forming elongated areoles near the costa in the sterile more or less united and reticulated at a distance from the costa sori copious more or less remote from the margins involucre orbicular cordate readily deciduous *Hook. Sp. Fil.* iv 61 — *Aspidium Lenzianum* *H. & Bot Zeit* 14 474 *Metten. Fil. Hort. Lips.* p 94 t 22 f 89 — *Pleocnemia* *Pr. Tent. Pterid.* p 183 *Epimel. Plant.* p 10 *Hook. Gen. Fil.* t 70 A (involucre omitted) and t 97 *J. Sm. in Hook. Journ. Bot.* iii p 411 *Brock. Fil.* l S *Expl. Exp.* p 183 — *Polypodium Caud.* in *Freye Voy.* p 371 t 6 — *Pleocnemia Cumingrona* (fertile portions of the frond more contracted) *Pr. Epimel. Bot.* p 10 — *Aspidium conjugatum* *Bl. En. Fil. Jav.* p 169 — *Pleocnemia conjug.* *Pr. Epimel. Bot.* p 209 and I *Javanica* p 10

The specimen figured is from Birmah—(Purish)

Hab. Moluccas Java Ceram Luzon, China Mishmee and Assam Sylhet, Birmah, Samoan and Feejee Islands

PLATE No CXXXIV



*Neocnemidophorus* *Lauraeana*  
Hb. K.







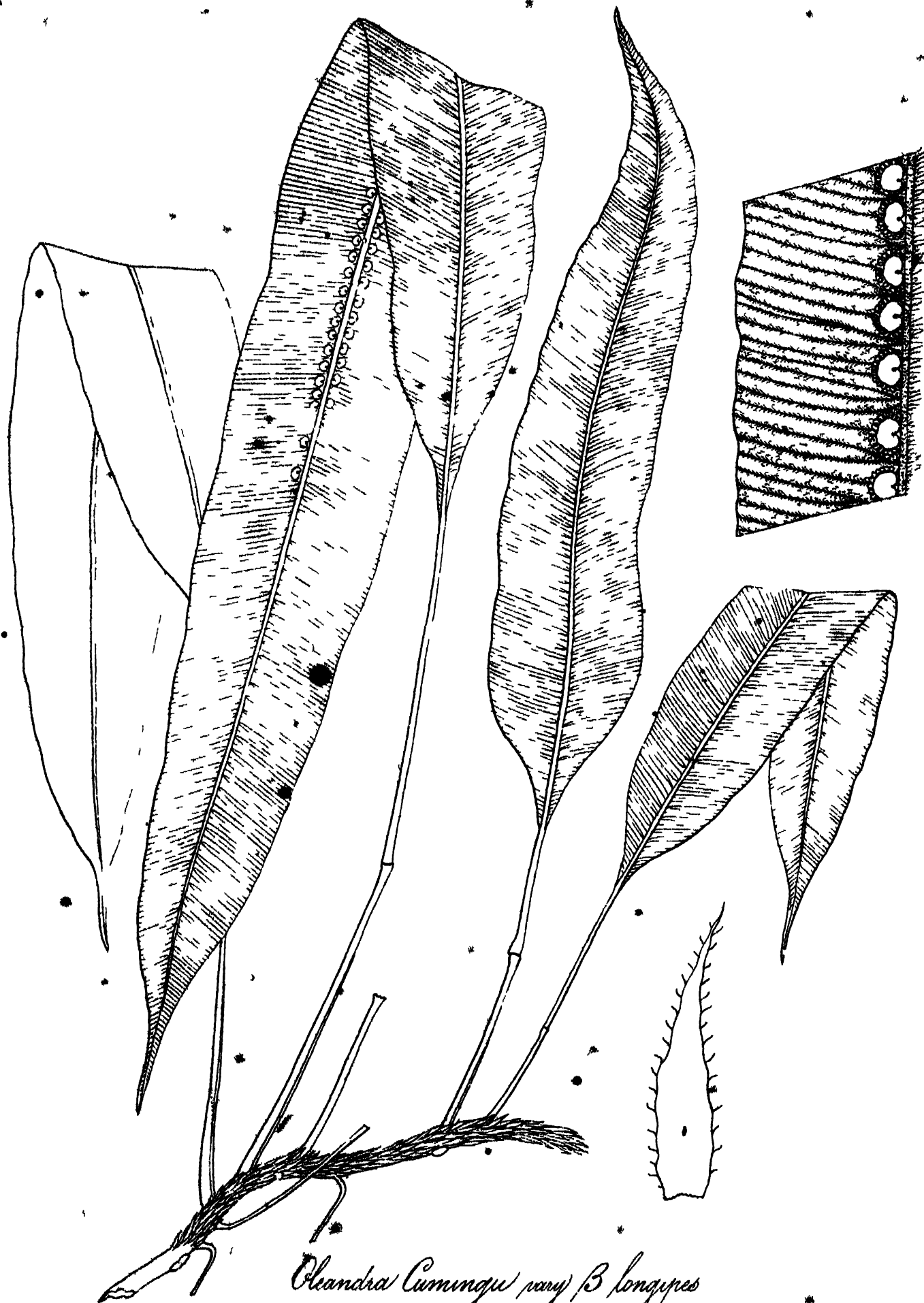
## OLEANDRA (See ' Ferns of Southern India ' p. 32)

**OLEANDRA CUMINGII** (J. Sm.) Caudex apparently creeping scarcely so thick as a writing pen, clothed with close pressed subulate imbricated scales stipites subterminal and subaggregated 2-3 inches long slightly downy articulated within  $\frac{1}{2}$  of an inch from the base fronds 1-1½ foot long firm membranaceous elongato-lanceolate acuminate very much attenuated and gradually decurrent at the base pubescent villous on the costa and veins sori rather large forming a single and scarcely interrupted line very near to and on each side the costa *Hook Sp Fil* iv 158 *J Sm in Hook Journ Bot* iii p 413 (name only) *J Epimel Bot* p 41 — var *longipes* — stipes 4-6 inches long inferior articulation 1-2½ inches long fronds less attenuated at the base sori quite costal in one instance irregularly scattered at a distance from the costa

The specimen figured is from Birmah — (Parrish)

Hab Luzon Birmah Assam

PLATE No CXXXV



*Oleandra Cumingii* var. *B longipes*  
(J Sm)





## POLYSTICHUM (Sec 'Ferns of Southern India" p 41)

**POLYSTICHUM AURICULATUM (VAR) SUBBIPINNATUM** (Hook) Pinnæ subcoriaceous, variously and deeply lobed and toothed, below frequently again pinnated the lobes and pinnules spinulose (thus bordering on aculeatum var lobatum)—*Hook Sp Fil* iv p 11 *Aspidium ocellatum* —*Wall Cat* n 98 —*A lentum*, *Don Syn. Nep* p 4

The specimen figured is from the Khasya Hills, (Dr Thomson) though differing considerably from the normal state of *P auriculatum* (Pl CXX of the Ferns of Southern India) Sir W Hooker only considered it a variety of that species

Hab Nepaul, Kumaon (elevation 2,600 feet,) Khasya, Harabagh.

PLATE No CXXXVI



*Polystichum auriculatum*  
var. *bipinnatum* (Hook.)







## SAGENIA (See ' Ferns of Southern India ' p 27)

**SAGENIA SEMIBIPINNATA** (Hook ) Caudex creeping scaly stipites a span to a foot high striated with prominent angles reddish brown as well as the rachis and costæ fronds 1 1½ foot long oblong ovate in circumscription coriaceous membranaceous dark brown when dry glabrous sub bi tripinnate pinnae 9 11 6 10 inches long, linear lanceolate subflexuose acuminate tapering at the base quite entire strongly costate the lowest pair or two pairs long petiolate tripartite or 3 foliate, sometimes again divided so as to be twice trifoliate, primary veins sub horizontal united by arches with the margin, the rest variously anastomosing, the areoles appendiculate sori (only young and imperfect) compital involucre subreniform — *Hook Sp Fl* iv p 9 *Polypodium semi bipinnatum* — *Wall Cat n* 388 and 2,229

The figure is taken from Sir W Hooker's Sp Fl

Hab Penang, Borneo

PLATE No CXXXVII



*Strymonia acutiferrata*  
Hook.





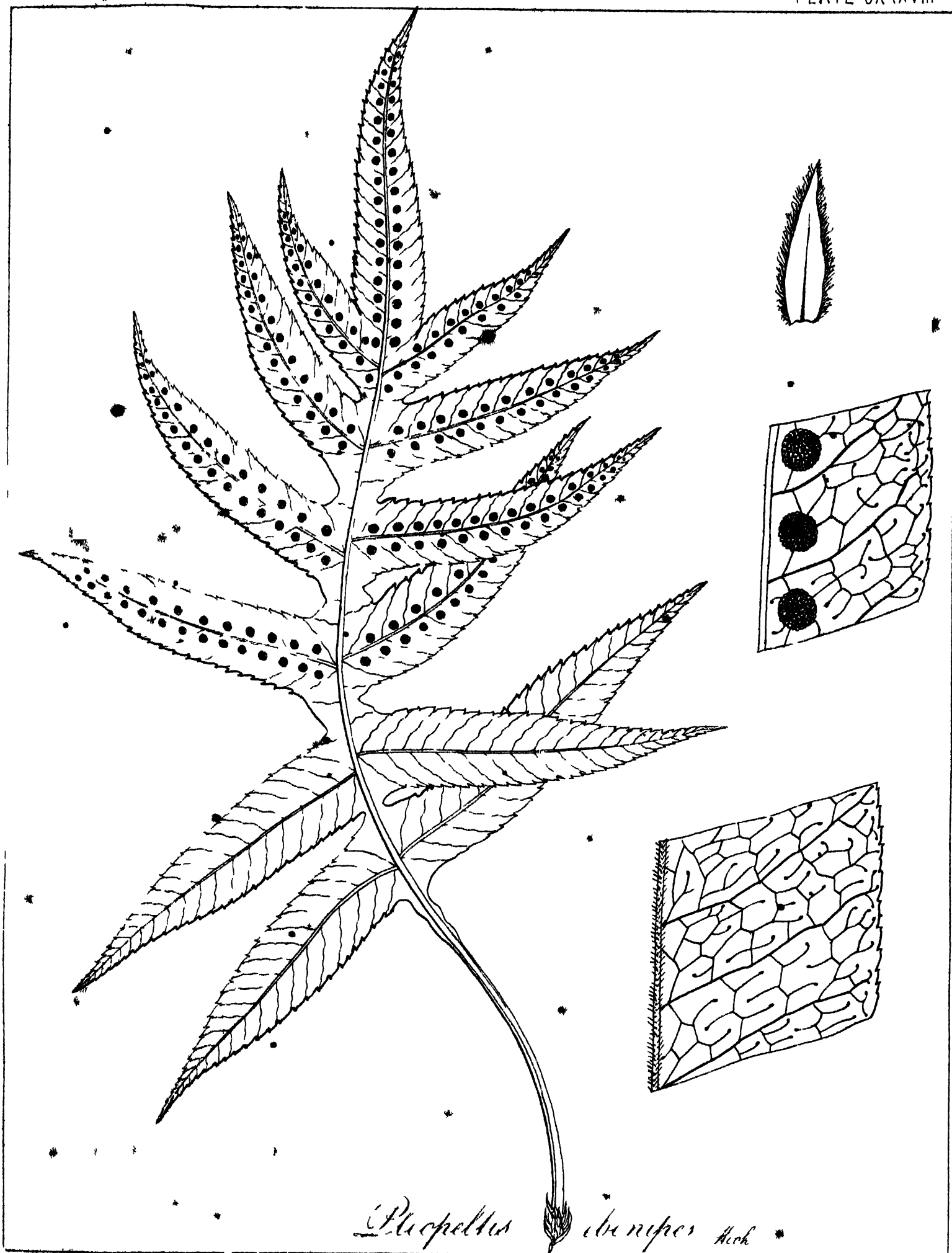
## PLEOPELTIS (See 'Ferns of Southern India, p 57)

**PLEOPELTIS EBENIPES** (Hook) Caudex stout creeping elongated and knotted with short frondiferous branches, every whorl densely imbricated with intensely black polished ovato lanceolate subcoriaceous concave scales fusco pubescent at the margin stipites stramineous 6 inches to a span long fronds a span to 1½ foot long broad ovate or deltoid cordate at the base, acuminate (by the long terminal segment) coriaceous membranaceous subrufescent when dry minutely and compactly pollucido punctate deeply pinnatifid with acute or obtuse sinuses segments 4 to 6 inches long ¾ 1 inch wide, very patent from a broad base oblong lanceolate sharply acuminate, closely serrated lowest pair generally opposite and drawn in as it were at the very base so as to form a more or less deep sinus at the summit of the stipes, venation very manifest costules distinct parallel moderately distant extending to the margin, these are united by transverse veins forming about 3 4 series of areoles including free and connected veinlets of which the second only are soriferous sori very large orbicular in a single series very near the costa.—*Hook Sp Fil* iv p 88 *Polypodium melanopus* —*B. in Wall Cat n 293 in part* (*v Cat n 293 at p 83, not P melanopus Hook and Grev*)

The specimen figured is from Sikkim, (Dr Thomson)

Hab Nepaul (10,000 feet elevation), N W Himalaya (8—9,000 feet elevation) Sikkim (8 000 feet)

PLATE No CXXVIII



*Pteris benipes* Hook







§ 10—*Menisieceæ*(1) *Veins arcuately anastomosing forming costal areoles venules free***BRAINEA** *J. Smith Catalogue of Kew Ferns, 1856 v**(Bowringia Hook and Champion)*

Gen char *Stipe* non indusiate short transverse curved the *receptacles* seated on the arcuate costal veins and often extending more or less up the parallel oblique free venules at length irregularly confluent *Veins* arcuately anastomosing at the base forming costal areoles *venules* simple or forked parallel connivent with the thickened margin

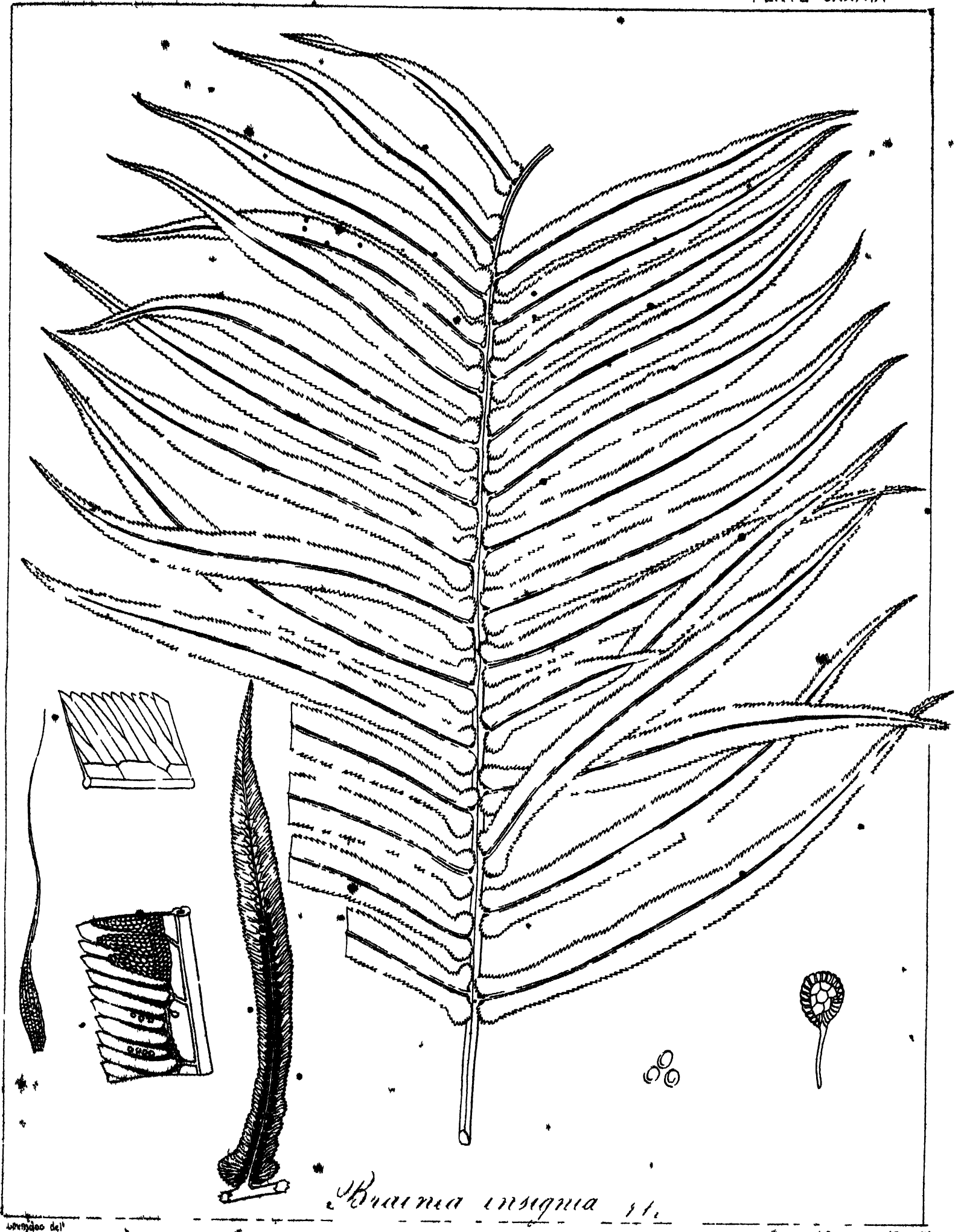
Fronds rigid coriaceous pinnate, becoming pinnato pinnatifid Rhizome arborescent 3-4 feet high (*Moore*)

**BRAINEA INSIGNIS** (Hook) Caudex arborescent as thick as a man's arm clothed with shaggy dark brown or ferruginous long subulate lanceolate scales stipites stout, short scarcely a span long fronds not unlike a *Lomaria* firm coriaceous bright-green pinnated or below bipinnated pinnae very close placed horizontal 5-6 inches long 4 lines broad, from a cordate base linear oblong gradually and finely acuminate minutely serrated—*Hook Sp Fil* v 162 *Bowringia, Hook Kew Gard Misc* v p 23 t 2—*Hook Fil Exot* t 38

The specimen figured is from Burmah (the Pine Forests) [Parish]

Hab Hongkong Eastern Bengal khasya (elevation 4000 feet.) Burmah

PLATE No CXXXIX



*Brauneria insignis* H.





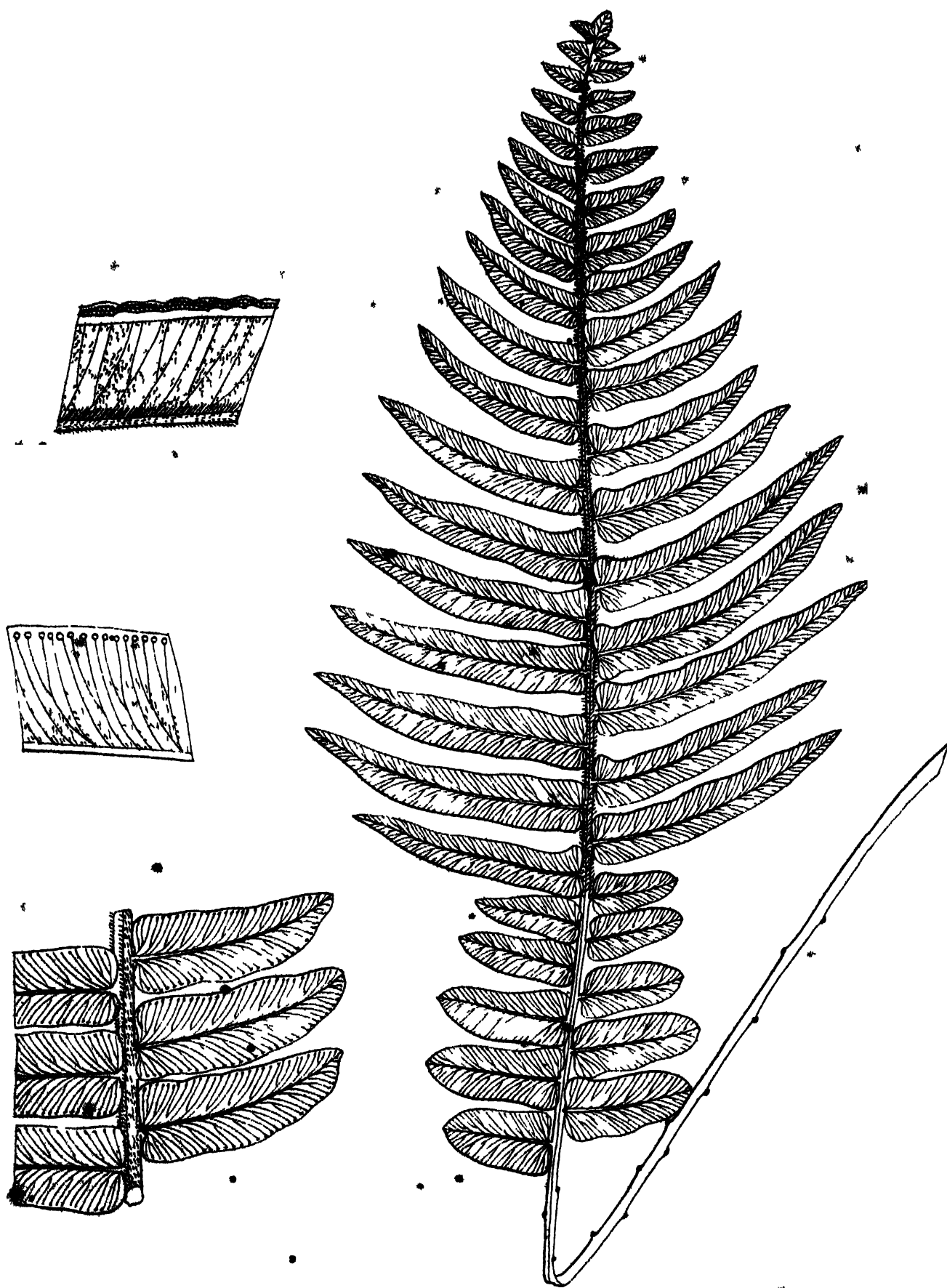
LINDSÆA (See ' Ferns of Southern India, ' p 7 )

**LINDSÆA LANUGINOSA** (J Sm) Caudex tall robust fronds up to 3 feet long oblong lanceolate pinnated pinnae sub coriaceous approximate very numerous oblong approaching to lanceolate more or less falcato incurved obtuse or acute, deciduous the sides equal the base truncate sessile, below clothed with deciduous wool, costa central veins spreading copious, in old fronds terminating on the upper side in white cretaceous dots just within the margin, sorus on both sides and at the margin continuous, stipes short and rachis (stout) more or less woolly — *Hook Sp Fl* 1 p 210 *Wall Cat n* 154 *Isoloma, J Sm*

The specimen figured is from Burmah (Parish )

Hab Singapore, Penang, New Guinea, Burmah

PLATE No CXL



*Lindsaea lanuginosa*  
Wall







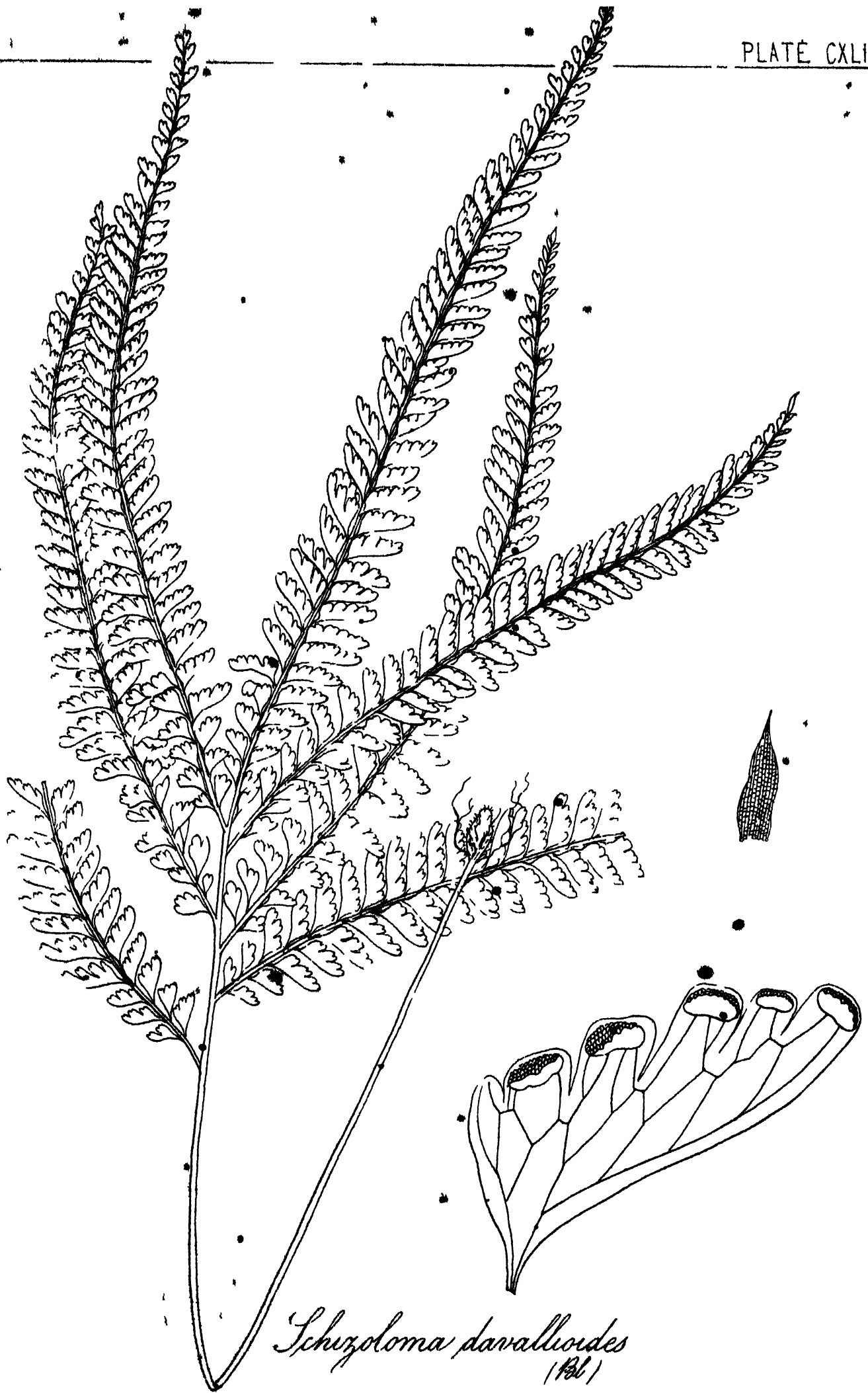
SCHIZOLOMA (See Ferns of Southern India ' p 9 )

**SCHIZOLOMA DAVALLIOIDES** (Bl) Caudex creeping stipes and rachis long tetragonous glabrous stipites tufted frond subdeltoid ovate bipinnate pinnæ erecto patent lanceolate acuminate, pinnules dimidiato oblique membranaceous reticulated (reticulations few) the apex obtuse superior base truncate costa at the inferior margin superior margin rather deeply but irregularly lobed sori interrupted linear confined to the apices of the lobes — *Hook Sp Fil* 1 224 *Bl Fil Jav* p 218 *Lindsaea lobata, Wall Cat* n 152 *Davallia Kunziana* — *Hook Sp Fil* 1 177

The figure is taken from Sir W Hooker's *Sp Fil*

Hab Singapore, Java, Malacca

PLATE No CXLI



*Schizoloma davallioides*  
(Pl.)





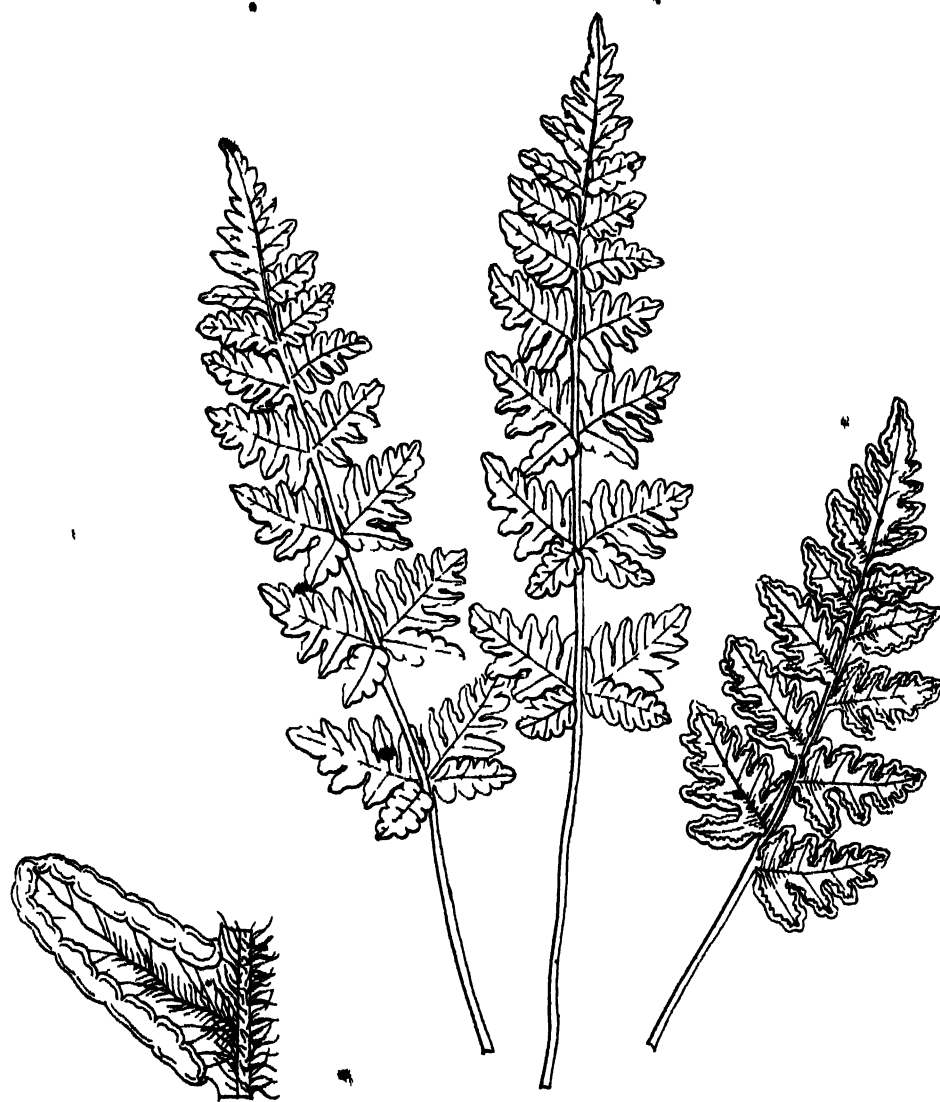
## CHEILANTHES (See ' Ferns of Southern India ' p 63)

**CHEILANTHES SUBVILLOSA** (Hook.) Stipes shining brown slightly scaly frond broad lanceolate or ovate pinnate thin sub membranaceous glabrous above soft villous about the rachises beneath, pinnae all obtuse upper ones lanceolate the rest broad deltoid lanceolate or ovate pinnatifid rarely the lowest lacinae again pinnatifid the margin nearly entire involucres of nearly the same color and texture as the frond sometimes subrotund and free mostly continuous lobed and crenated main rachis especially above villous  
*Hook Sp Fl 1 p 87*

\* The figure is taken from Sir W. Hooker's Sp Fl

Hab Western Himalaya

PLATE No CXLII



*Cheilanthes subvillosa*  
(Hook.)







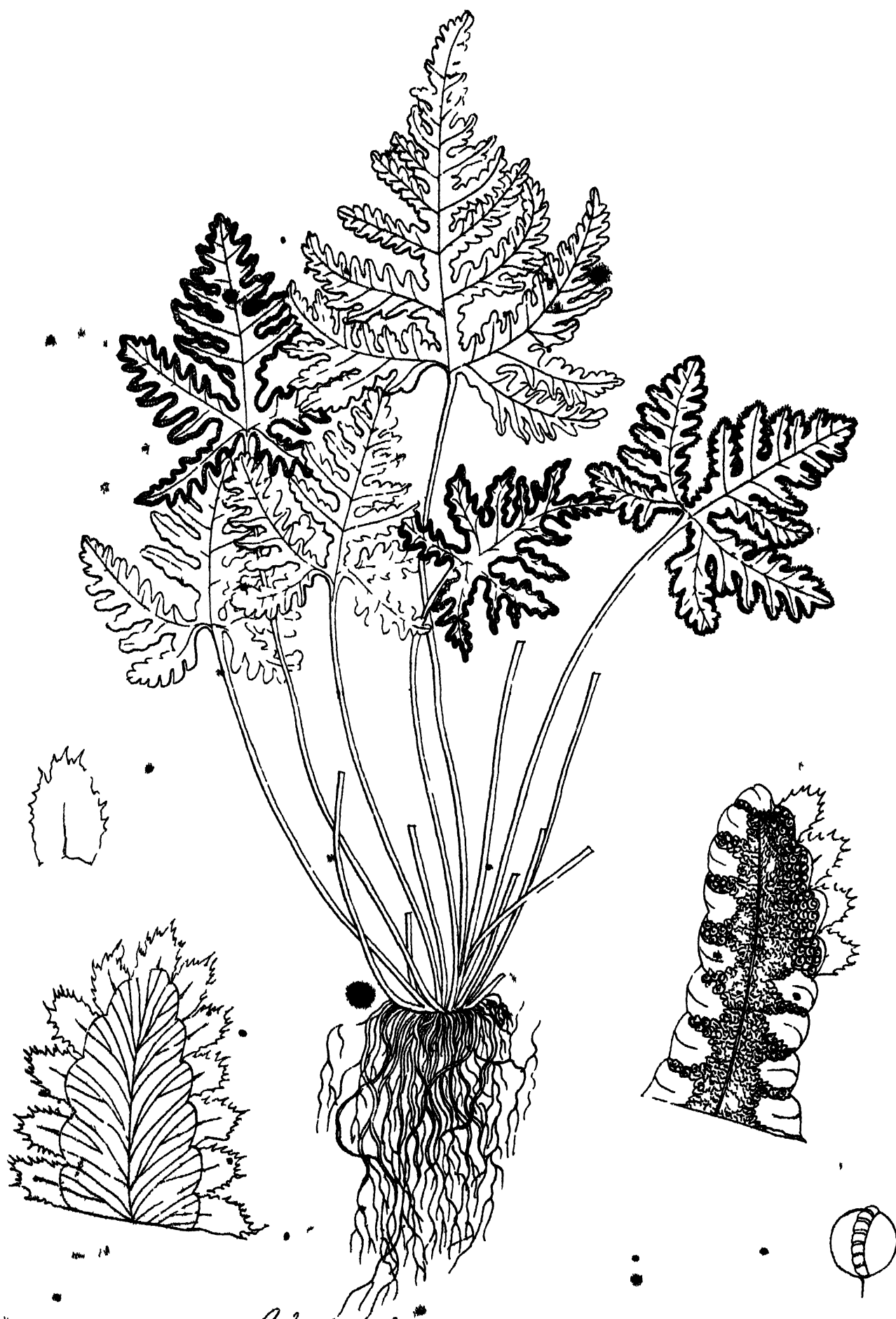
## CHEILANTHES

**CHEILANTHES ARGENTEA** (Hook.) Glabrous glossy brown a little scaly below caudex short thick creeping stipites tufted frond cordately 5 angled tripartite white and pulverulent beneath each of the three primary divisions pinnatifid at their base bipinnatifid the margin crenated involucres membranaceous brown confluent transversely waved and crenated —*Hook Sp Fil* 1 p 76  
*Pteris argentea*, *Gmel in Nova Acta Ietrop* xii t 12 f 2 *Allosorus Presl* *Cussebeera J Sm* —*Pteris pedata* var *Linn*

The specimen figured is from Burmah, (Parish)

Hab Burmah, Siberia, Kamtschatka, Dahuria Lake Baikal

PLATE No CXLIII



*Cheilanthes argentera*  
Hook. & G.





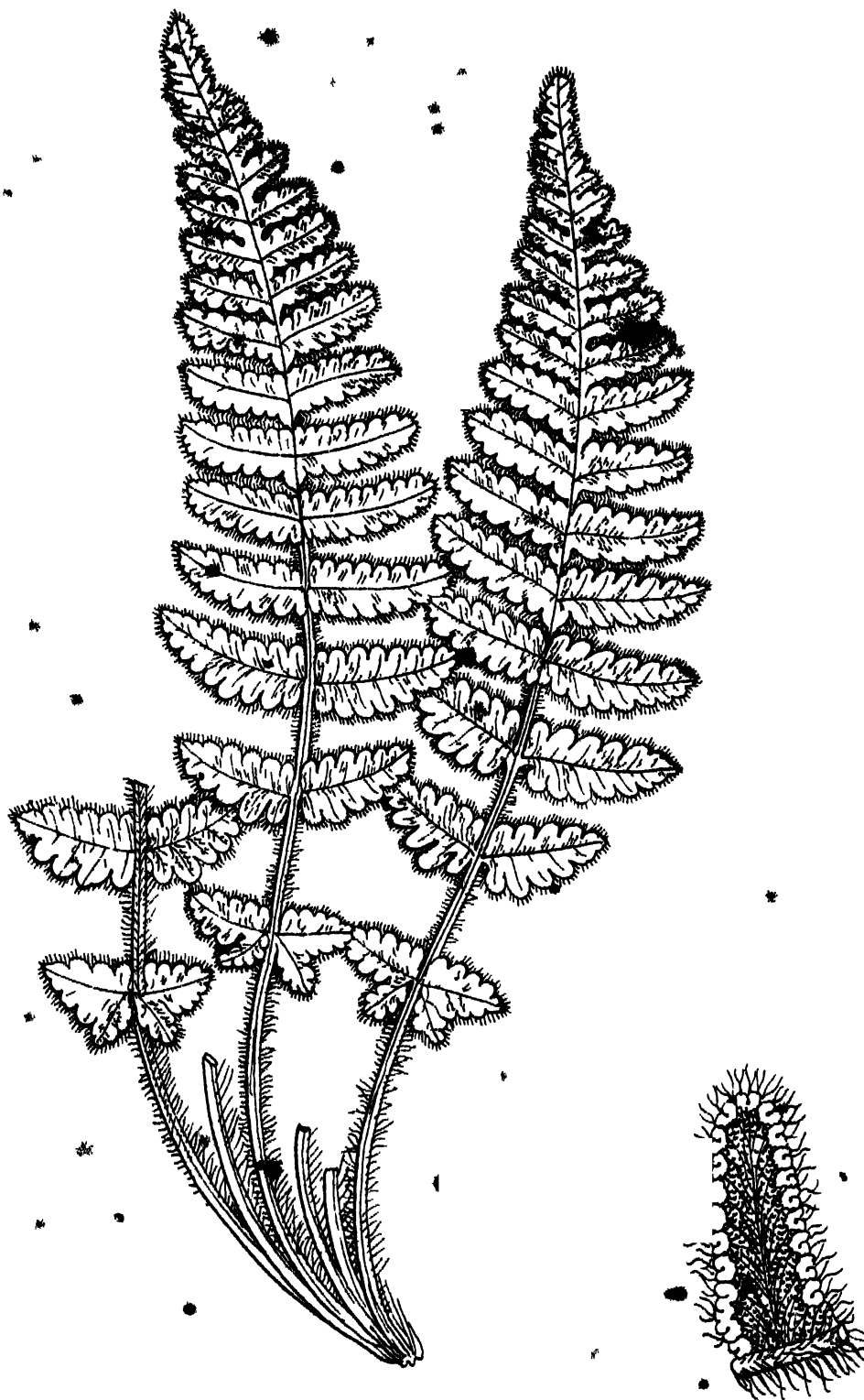
## CHEILANTHES

**CHEILANTHES RUFA** (Don) Roots tufted stipites rather short with few spreading scales and shaggy as is the whole rachis with very copious spreading ferruginous hairs fronds about a span long ovato lanceolate subcoriaceous hirsute pubescent above white and pulverulent beneath, the margin densely ferruginous hirsute pinnate pinnatifid at the apex pinnae oblong very obtuse pinnatifid the lower ones subovate sub bipinnatifid involucre dark brown membranaceous approximate and free or continuous and waved and crisped or lobed and toothed at the margin, often quite concealed by the copious ferruginous tomentose shaggy hairs — *Hook Sp Fil* 1 p 79 — *Don Prod Fl Nep* p 18 *Cheilanthes farinosa* var *vestita* — *Wall Cat n* 71 (4)

The specimen figured is from Burmah (Parish)

Hab Nepaul, Mergui, Mishmee, Burmah, Khasya, Simla

PLATE No CXLIV



*Cheilanthes rupestris* (Pursh)







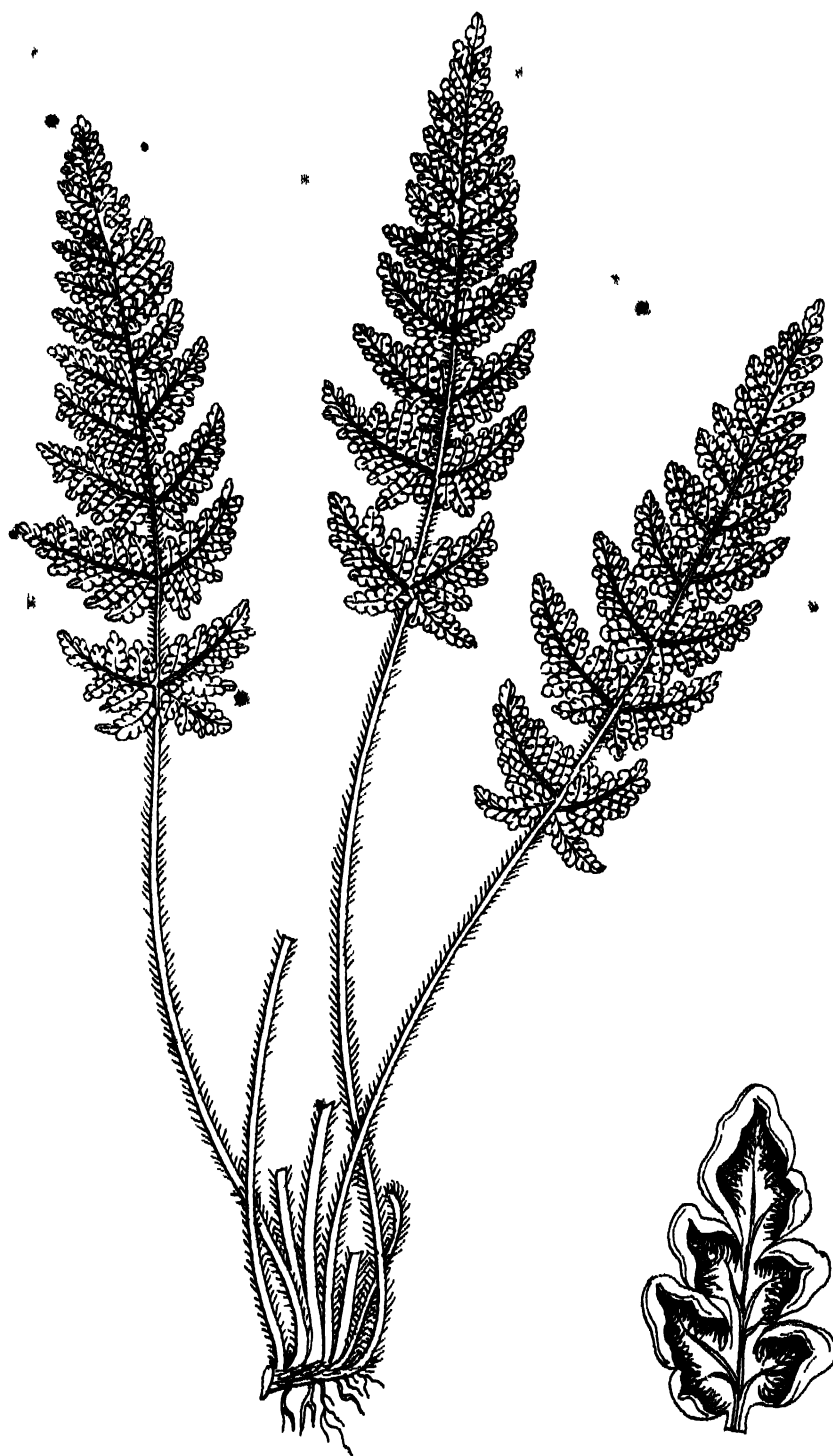
## CHEILANTHES

**CHEILANTHES SZOVITZII** (Fisch et Mey) Roots densely tufted from a short thick caudex, stipites crowded 2-4 inches long slender and as well as the principal rachises ebeneous somewhat hairy mixed with copious long spreading subulate scales fronds 3-4 inches long oblong lanceolate quite glabrous above densely woolly and generally tawny beneath tri-subquadripinnate primary pinnæ ovate acuminate approximate or distant pinnules small subrotund or subcordate sublobate terminal ones often larger and oblong the margin revolute forming nearly a continuous involucre the edges obscurely membranaceous — *Hook Sp Fil 1 p 98 Fisch et Mey in Hohenacker Fn Pl Prov Talysch p 11*

The figure is taken from Sir W. Hooker's Sp Fil

Hab. Caucasian Alps Afghanistan, Peshawur Indus Valley (7500 feet elevation) Kashmir, and Western Tibet (8,000 feet elevation) Scinde

PLATE No CXLV



*Cheilanthes Gzowtzu*  
(Fuch et May)





## ASPLENIUM (See "Ferns of Southern India, p 42")

**ASPLENIUM FONTANUM** (Bernh) Caudex short thick tuberous densely rooting stipites 1 3 inches in length slender pale brownish green densely tufted fronds 3 6 inches long linear or broad lanceolate attenuated below membranaceous bright green bipinnate, pinnae approximate  $\frac{1}{4}$  to  $\frac{1}{2}$  an inch long patent or sometimes reflexed sessile ovate obtuse lowest ones dwarfed tripartite pinnules obovate or cuneate minute  $\frac{1}{2}$  a line to a line long the base entire the rest coarsely and spinuloso dentate sori few on each pinnule or lobe at length confluent, involucre very small athyroid white thin membranaceous — *Hook Sp Fil* iii p 193 — *Bernhard in Schrad Neu Journ* 1806 1 part 2 p 26 — *Sw Syn Fil* p 57 — *Willd Sp Pl* v p 272, — *Fngl Bot* t 2,024 — *Mett Aspl* p 140 *Athyrium Loth* — *Asplenium Haller* *Willd Sp Pl* v p 274

The specimen figured is from the Himalayas, (Dr Stewart)

Hab Europe, Britain, Himalayas

PLATE No CXLVI



*Asplenium fontanum*  
Bernh







## ASPLENIUM

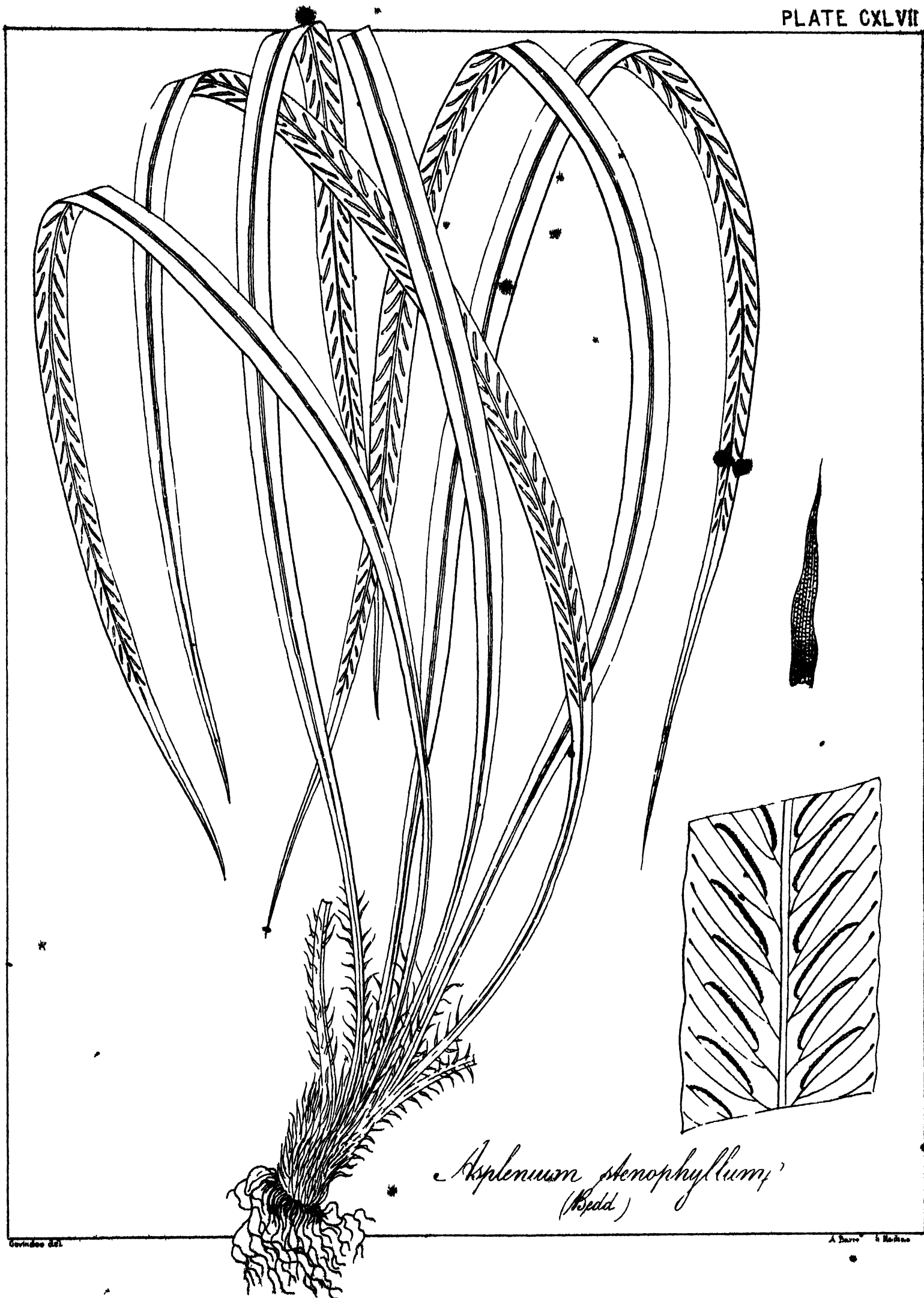
**ASPLENIUM STENOPHYLLUM** (Bedd) Caudex creeping densely clothed with linear acuminate black smooth scales, fronds subcoriaceous narrow linear acuminate 1 to 1.8 inches long  $\frac{1}{4}$  to  $\frac{3}{8}$ th of an inch broad perfectly glabrous gradually attenuated into a short stipes which is more or less furnished with scales similar to those on the caudex costa prominent sulcate veins sunken inconspicuous once forked terminating within the margin sori linear on the superior veinlet neither reaching to the costa nor extending to the margin involucre conspicuous

Allied to *A. ensiforme* (Wall.) but with very narrow fronds like a *Vittaria*

The specimen figured is from Rungro, Sikkim (elevation 6000 feet) (Dr. Anderson)

Hab. Sikkim—Himalaya

PLATE No. CXLVII



*Asplenium stenophyllum*  
(Radd.)





## GRAMMITIS (See "Ferns of Southern India" p 17)

**GRAMMITIS MICROPHYLLA** (Hook.) Caudex very slender filiform subrepent and intertwined so as to form a collection of tufted wiry fibres, stipites copious slender filiform very fragile dark purple ebeneous glossy 2-4 inches long fronds membranaceous sub diaphanous  $1\frac{1}{2}$  - 2 $\frac{1}{2}$  inches long glabrous triangular ovate 3 pinnate (or pinnate and 2-3 pinnatifid) lowest primary pinnæ half ovate the rest oblong ultimate pinnules (or segments) oval lanceolate entire acute decurrent upon the rachises which thus become winged veins dichotomous one in each pinnule or segment oblong not forked, veinlets terminating below the apex — *Hook Sp Fil v p 120 Ic Pl t 1916 Cent of Ferns t 16*

The specimen figured is from the Khasya Hills

Hub Khasya Hills

PLATE No CXLVIII



*Grammites microphylla*  
(Hook.)







## §13 GYMNOGRAMMEÆ

(c) *Veins connivently anastomosing below*STEGNOGRAMMA. *Bl En Fil Java* 172

(Syneuron J Sm M S—Gymnogrammitis Sp BL—Phegopteridis Sp Mittenius)

Gen char *Sori* non indusiate linear or oblong oblique parallel the *receptacles* simple elongated and medial *Veins* simple from a central costa the lower or more opposite pairs angularly connivent anastomosing

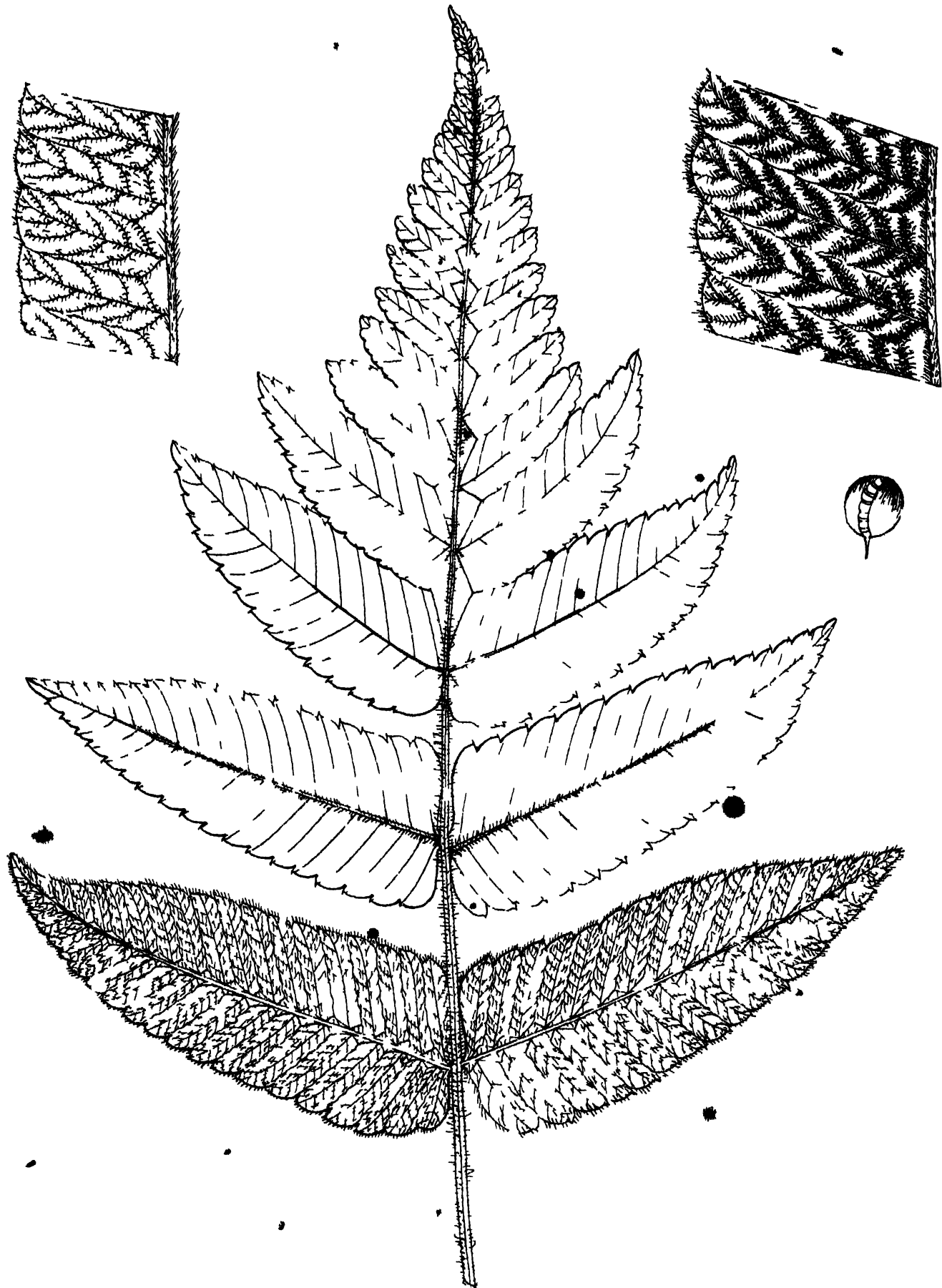
Fronds herbaceous pinnate or pinnato pinnatifid Rhizome thickish decumbent or erect and sub arborescent This is amongst *Gymnogrammeæ* what *Nephrodium* is amongst *Aspidiæ* and *Goniopteris* among *Iolypodiæ* (Moore)

**STELGNOGRAMMA ASPIDIOIDES** (Bl) Caudex ascending more or less paleaceous subrepent *whole* plant on both sides especially on the veins hairy (except the caudex) sometimes densely villous stipites terminal on the caudex tufted a span to a foot long a length glabrous glossy fronds 1 1½ foot long 5 6 inches wide ovate lanceolate acuminate pinnated pinnatifid at the apex firm membranaceous pinna opposite or alternate sessile subtruncate or more or less adnate at the base 3 4 inches long rarely an inch wide oblongo lanceolate lobato pinnatifid superior ones confluent veins 5 6 pairs from each costule simple 3 lower ones united to those opposite and forming an excurrent spurious vein reaching to the sinus those in the lobes free all soriferous sori linear oblong occupying nearly the whole length of the veins—*Hook Sp Fil* v 150—*Bl En Fil Jar* p 172 (*not Fil Jar* p 112 *which* is *Gymnogramma totia*) *Gymnogramme Stegnogramme Bl Fil Jar* p 98 t 44 *Phegopteris Stegnogramme, Metten Fil Hort Lips* p 64

The specimen figured is from Khasya (Dr Thomson)

Hab Java, (3 4 000 feet elevation) Khasya (6 000 feet elevation) Ceylon (vide p 78 "Ferns of Southern India and Ceylon")

PLATE No CXLIX



*Adiantum aspidioides*  
(136)





## § 13 GYMNOGRAMMEÆ

(d) *Venus pinnate venules reticulated with free included veinlets*

SELLIGUA Bory Deut Class d Hist Nat vi 587

(Diagramma Blume —Colysis Presl —Dictyogramma Presl —Grammitidis Sp Auct Gymnogrammatis Sp Auct —Hemionitidis Sp Auct —Polypodi Sp Auct —Ceterachis Sp Auct)

Gen char Sori non indusiate oblong or linear oblique the elongate *receptacles* lying between and parallel with the primary veins *Venus* pinnate or sub pinnate from a central costa *Venules* compoundly anastomosing producing within the areoles variously directed free curved *veinlets*

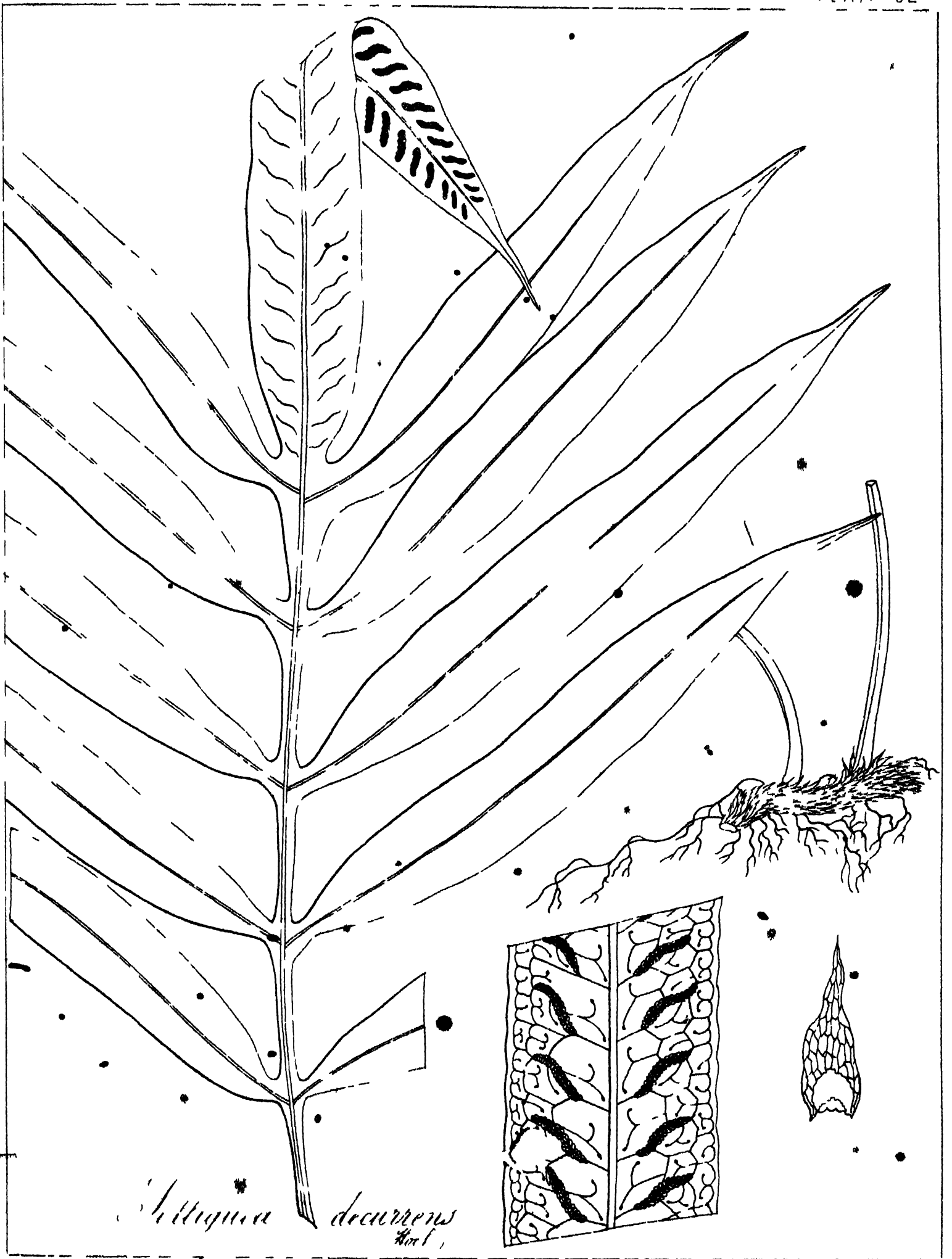
Fronds simple, pinnatifid or palmately lobed, herbaceous or coriaceous Rhizome creeping (Moore)

**SELLIGUA DECURRENS** (Hook) Caudex creeping palaceous stipites distant 1 foot and more long stramineous brown fronds 1 1½ foot and more long 8 10 inches broad firm membranaceous, broad ovate deeply pinnatifid or pinnated with the rachis more or less winged segments spreading 6 8 inches long ½ an inch or less to 1½ in h wide linear lanceolate or broad oblongo lanceolate finely acuminate subopposite and very distant generally contracted near the base then dilated above and so extending above and decurrent below as to form a narrow or broad wing between the segments veins sometimes slightly costuliform but usually they constitute rather large unequally sized hexagonal areoles including free clubbed veinlets sori linear obliquely patent varying much in length and in breadth commencing near the costa but never extending to the margin —*Hook Sp Fil v p 161* —*Grammitis decurrens Wall Cat n* —*Hemionitis pothifolia Don Prod Nep p 13* —*Colysis P Fpim Bot p 148* —*Polypodium Mett Poly p 106*

The specimen figured is from Moulmein—(Parish)

Hab Nepal, and all along the Himalayas from N W Bengal to Sikkim Photan Khasya ( 600 feet elevation) Moulmein Luzon China, Loochoo, Hong Kong Formosa Japan, Nagasaki

PLATE No CI



*Adiantum decurrens*  
Hook.









